Mensuration et évaluation des impacts et héritages de projets de mega événement dans le cadre du capital immatériel

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NNT : 2016SACLS173

THESE DE DOCTORAT
DE
UNIVERSIDADE FEDERAL DO RIO DE JANEIRO
ET DE
L'UNIVERSITE PARIS-SACLAY
PREPAREE A L'UNIVERSITE PARIS SUD

ECOLE DOCTORALE N° 578 SHS
Sciences de l'homme et de la société
Programa de Engenharia de Produção

Spécialité de doctorat : Sciences de gestion

Par

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Impact/Legacy Measurement and Evaluation in Mega Event Projects with Focus on Intangible Assets

Thèse présentée et soutenue à Rio de Janeiro, le 9 mai 2016 :

Composition du Jury :

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université PARIS-SACLAY | ÉCOLE DOCTORALE Sciences de l'homme et de la société (SHS)

Titre : Mensuration et évaluation des impacts et héritages de projets de mega événement dans le cadre du capital immatériel

Mots clés : Capital immatériel, Mega projets, Impacts, Héritage

Résumé : Les méga événements peuvent jouer un rôle important dans le développement régional et la compétitivité des pays/villes d'accueil. Cet avantage est une fonction de l'effet de levier des investissements dans les infrastructures, le tourisme, et dans le développement du bien-être des habitants. Toutefois, les méga événements ont aussi des désavantages potentiels. Afin de vérifier le rapport coût-bénéfice des méga événements, la plupart des chercheurs mesurent les résultats et les impacts socio-économiques tangibles de ces projets. Néanmoins, des études plus récentes indiquent que les impacts immatériels constituent potentiellement les principaux bénéfices économiques des méga événements. Les capitaux immatériels sont devenus des facteurs stratégiques pour la création de valeur future et sont désormais considérés comme les facteurs clés de la croissance économique et de la compétitivité. Cependant, l'existence de méthodes opérationnelles fiables pour évaluer les aspects immatériels de méga événements est encore rare. Ainsi, l'objectif de la recherche est de développer un modèle pour mesurer et évaluer la performance des impacts des projets de méga événements, en tenant compte des actifs immatériels. À cette fin, nous avons appliqué le paradigme de recherche connu sous le nom de design science research (DSR). Le DSR est basé sur le fait de créer une solution pratique, le plus souvent un artefact, pour résoudre les problèmes pertinents et complexes, en sur les interventions de la Coupe du Monde de la FIFA 2014 dans l'industrie du tourisme et au sein de la région de la ville du Rio de Janeiro. Sur la base des approches de mesure du capital immatériel disponibles, nous avons développé un cadre théorique et un modèle opérationnel pour rassembler les facteurs de succès immatériels pertinents. Un modèle a été développé, appelé le modèle des impacts immatériels de méga événements (ME-I2). Il est composé de cinq dimensions du capital immatériel, chacune incorporant un groupe d'actifs, 15 dans l'ensemble, et 42 indicateurs pour mesurer la performance des interventions du projet dans le développement de ces actifs. L'application du modèle permet trois résultats. La détermination du degré d'importance (valeur relative) de chaque dimension du capital immatériel, l'évaluation des performances des interventions du projet, d'une manière générale et en ce qui concerne chaque dimension du capital immatériel, et la détermination de la valeur dynamique du capital immatériel. Le modèle a été testé dans une étude de cas et a démontré son adéquation et pertinence. Il émerge comme un outil potentiel pour fournir des informations pour la gestion et la prise de décision stratégique en vue du développement de la valeur pour les le pays/villes d'accueil. Il traduit par ailleurs les perceptions et les attentes des parties prenantes et pourrait être une source précieuse d'informations en ce qui concerne les facteurs de succès immatériels qui pourraient améliorer la

tenant compte du contexte dans lequel ses résultats seront appliqués, dans un processus de recherche qui puise dans les théories existantes pour arriver à une solution. De manière à prévenir l'absence d'un contexte réel, et d´un objectif bien défini pour analyser les impacts, le modèle a été développé en se focalisant performance des méga événements et soutenir la compétitivité et le développement régional.

Title: Impact/legacy measurement and evaluation in mega event projects with focus on intangible assets

Keywords: Intellectual capital, Mega projects, Impacts, Legacy

Abstract: The mega events projects can play a significant role in local development and competitiveness. This benefit is generally due to the catalyst effect of a series of factors related to infrastructure, tourism and local population welfare/quality of life. However, mega events also have potential downsides. In order to assess the cost-benefit of hosting them, we usually measure its tangible socio-economic outcomes and impacts. Nevertheless, recent studies indicate that the positive intangible impacts can potentially be the most important benefits due to it have become strategic factors for value creation and economies' growth and competitiveness. However, the existence of valid operational methods to evaluate the mega events intangible aspects is still unclear. Thus, the current study objective is to develop a performance model for measure and evaluate the mega event projects impacts, taking into account the intangible assets. To perform it, we applied the design science research (DSR) paradigm. In a search process that draws from existing theories, we developed a theoretical framework and an operational model to gather the relevant intangible success factors with focus on the 2014 FIFA World Cup interventions in the Tourism industry at the Rio de Janeiro region. We named it the Mega Event Intangibles Impacts (ME-I2) Model. It consists of five dimensions of the intangible capital, each one incorporating a group of assets, 15 as a whole, and 42 indicators to measure the performance of the interventions in developing such assets. The ME-I2 model returns three different outcomes. The degree of importance (relative value) for each dimension of intangible capital, performance ratings for the mega event interventions in an overall fashion and concerning each capital dimension, and the dynamic value of the intangible capital. We tested the ME-I2 model in a case study. It showed adequacy and appropriateness, seeming to us an interesting tool for effective strategic management and decision-making focused on contribute to translate more effectively the intangible impacts into tangible improved value creation (positive legacies) for the host city/country, with basis on the perceptions and expectations of the mega event stakeholders

ACKNOWLEDGMENT

The completion of my Ph.D. thesis has been a long journey, and I could not have succeeded without the invaluable support of several people. Without these supporters, especially the select bellow, I may not have gotten to where I am today, at least not in a safe and sane condition.

Firstly, I'd like to give special thanks to my Brazilian advisor, Dr. Marcos Cavalcanti, who helped me push through the current research process. His flexibility, encouragement, inspiration, support and relaxed manner, in addition to a good working relationship was an impetus for me to keep the track. Thank you very much!

I'd also like to give special thanks to my French advisor, Dr. Ahmed Bounfour, who help me a lot to understand the real meaning of a Ph.D. degree. His examples, mentorship, patience, resilience and faith during the supervisor meetings were the fundamental stone to transform a consultant in a real researcher. Thank you Professor!

Thirdly, I am particularly grateful for the assistance given by Diego Souza and Maryse Chommette. Their administrative support, inputs and personal cheering were greatly appreciated. Thank you.

I am very grateful to Dr. Lamartine da Costa. His support and encouragement to dare go beyond in the field of the mega event projects evaluation was a truly inspiration.

I'd like to thank the other jury committee members, Dr. Samuel Jurkiewicz, Dr. Alain Rallet and Dr. Sergio Lifschitz for the valuable and constructive support, suggestions and comments to improve the quality of the research and the final manuscript.

I'd also like to thank the people and the organizations that accepted to take part as the "voice" of the stakeholders. Without their precious and valuable help, it would not be possible to conduct this research.

My gratitude is also extended to all my Brazilian and French "academic" colleagues, represented here, respectively, by Hildete Vodopives and Andrés Barreneche. Thank you for your encouragement, support, exchange of ideas, and strong doses of coffee.

Of course no acknowledgments would be complete without giving thanks to my parents. Both have given me the foundations to face the life and they are great model of character. Words cannot express how grateful I am!

Last, but certainly not least, I must acknowledge with remarkable and deep thanks my wife, Adriana Maciel Rodrigues. She has patiently tolerated many long hours alone while I worked on the thesis and through her love, patience and support all the hard work has become attenuate.

INDEX

FIGURE INDEX

TABLE INDEX

1. INTRODUCTION

1.1. Research question overview

There is a growing interest and rivalry between some nations in costly bidding process to host global mega events, such as Olympic Games, sports world championships, cultural festivals and political summits. The reasons why these countries place value on such mega events are diverse. Usually, the motivation relies on aspects related to the acceleration of local socioeconomic development, benefits of optimism dissemination among the citizens, increase in external capital flow to host city/country, urban regeneration, and tourist attraction. (CLARK, 2008; KASIMATI, 2003; PREUSS, 2007).

In a search for reasons to host an Olympic Games, ZIMBALIST (2010) pointed out a number of potential economic benefits, which he divided into two groups. As direct economic impacts the author cited: a) the capital flow to host city/country; b) the infrastructure construction, or upgrade, related to the event; c) the lower transportation costs due improved networks, and d) the increase in tourists spending. As indirect economic impacts, the author reported: a) the advertising effect that showcase the host city/country as a potential tourist or business destination; b) an increase in civic pride; c) the improved local sense of community, and d) the improved perceived abroad image of the host city/country. PREUSS (2010) raises the number of potential benefits adding the intangible impacts related to the marketing of the host city/ country, the happiness of its citizens, the citizen entertainment and welfare, the sense of consuming or investing locally, the motivation of volunteers, the human resources skills development and the motivation to a more active life.

On the other hand, ZIMBALIST (2010) also alerted to the potential downsides inherent to the mega events, such as excessive costs, poor urban spaces use, inadequate planning, and facilities built for the Games underused after them, the known “white elephants”. Also sharing this point of view, PREUSS (2007) pointed out that mega events have a high risk of creating high public debts and, in some cases, it was unable to deliver all the positive impacts, planned or not. Such facts frequently lead to a general audience perception of high costs and poor performance. In his review study, ZIMBALIST (2010) failed to collect enough scientific evidence to support the delivery of the potential direct economic impacts, declared by the organizers in hosting the Olympic Games or the FIFA World Cup. The 1976 Montreal Olympic Games, for example, incurred a debt of about $10 billion in 2009 dollars, which took three decades to pay off (Burton, 2003 apud ZIMBALIST (2010). There are also other examples of heavy costs, such as the 1992 Barcelona, 2004 Athens and 2008 Beijing Olympics in which public

investment exceeded, respectively, US$8 billion, US$10 billion and more than US$40 billion (BRUNET, 1995; ZIMBALIST, 2010). The last Olympics edition, 2012 London, costs were about US$15 billion. The London Olympics project heavy costs and the recent global economic downturn led to a statement from the National Olympics Minister to the London's Telegraph (OSBORNE; KIRKUP, 2008), she said: “Had we known what we know now, would we have bid for the Olympics? Almost certainly not”.

Despite the potential downsides and high costs, some of these expenditures described above, result in an improved infrastructure that can generate significant intangible benefits to the host city/country. According to ZIMBALIST (2010), if there is a real economic benefit from hosting the Olympic Games, it is unlikely to happen in the form of improving the local government’s budgets. Such fact raises the question if there are positive, broader, long-term and less tangible economic impacts from hosting mega events to justify its spending. For the International Olympic Committee (IOC), Olympic Games rights holder, “The Olympic Games symbolize a unique venture as it has the power to deliver a significant experience which can considerably change a community, its image, and its infrastructure (…) as well as a long-lasting legacy for the host city and host communities.” (IOC, 2009a).

In a simplistic definition, legacy can be understood as the lasting impacts arising from mega event projects. According to the IOC's perspective, the legacy captures the value generated by sports facilities and public improvements delivered to the citizenship or to host city/country sports organizations not only during the event, but also after the Games. Preuss, finding the IOC definition somewhat narrow, and taking into account the complex and uncertain nature of the mega event projects legacy, proposed a more comprehensive definition, which will be assumed in the present study: “Irrespective of the time of production and space, legacy is all planned and unplanned, positive and negative, tangible and intangible structures created for and by a sport event that remain longer than the event itself” (PREUSS, 2007).

A classic benchmark described in the literature (BRUNET, 1995; CLARK, 2008; OLIVEIRA, 2012) to try answering the cost-benefit issue is the 1992 Barcelona Olympics project. It is considered a successful mega event project on the perspective of the modern urban development strategy. It reached a combination of urban and infrastructure modernization with a positive economic catalyst effect - "greater capitalization, growth of the service sector, internationalization, attractiveness, centrality, productivity, competitiveness" (BRUNET, 1995) - that was perceived by the local population as well as by leisure and business tourist (BRUNET, 1995; OLIVEIRA, 2012; PRONI; ARAUJO; AMORIM, 2008). However, the 1992 Barcelona Games left a debt of US$4 billion for the Central Spanish Government (ZIMBALIST, 2010). Are it worth it?

By tradition, the spotlight of practitioners, experts and scholars to assess the cost-benefit of hosting mega event projects has been targeted to identify the past experiences, by benchmarking approach, and to measure the tangible socioeconomic outcomes of these events, by macro-economic indicators (DA COSTA et al., 2008; ERNST&YOUNG, 2008; FIPE/FIA/USP, 2008; IOC, 2009b; KASIMATI, 2003; PREUSS, 2007; PRONI et al., 2008). A significant part of the studies was conducted by consulting firms hired by local governments and/or project organizers in an attempt to justify it to host city/country taxpayers. Regarding the Olympic Games, for example, KASIMATI (2003) did not found economic impact studies before the 1984 Los Angeles edition, and between 1984 and 2001 the majority of studies were commissioned by the Olympic Games proponents.

Following this rationale, the IOC started in 2000 an effort on developing an initiative called Olympic Games Impact Global Study (OGI). The OGI goal is try to improve the assessment of the overall impacts of the Olympic Games in the host city/country, its environment and its citizens. To do this, it embeds the concept of sustainable development and proposes 125 indicators clustered into three categories of impacts: a) 38 economic, b) 46 social, and c) 41 environmental (FURRER, 2002; IOC, 2009b; PWC, 2005). As response to the model operational complexity, the indicators was re-clustered in 30 thematic topics, nine economic, 12 socio-cultural and nine environmental, on its last version (IOC, 2012).

The possible explanations for the research focus on the benchmark and socioeconomic outcomes approaches can be the lesser difficulty in measuring the socioeconomic indicators, usually published by established public and private research institutes, its tangible nature needed for political justification of investing scarce public resources in a project, and the lack of reliable models and performance indicators to assess the intangible aspects in this context. Although the intangible impacts are of importance, researchers still "… find it difficult to place a dollar value on them" (ZIMBALIST, 2010). Other weakness of the traditional approaches is only focusing on the impact and/or the effect of the mega event on the local and/or country macroeconomic factors. They do not provide relevant information for an effective decision-making process, neither for the strategic management of the mega event projects positive impacts, legacies and benefits.

The existing evidences about the propagated positive, broader, long-term benefits from mega event projects show that they do not occur by accident or without an effective action (CLARK, 2008; OECD, 2010). Although unplanned impacts can arise, the planning and management of the positive impacts and legacies must be performed to reduce the mega event project inherent risks and to ensure an effective investment

reward to the host city/country. The lack of a strategic vision for the event and a proper planning and management of impacts could lead to lost opportunities and wasted resources (BOUKAS; ZIAKAS; BOUSTRAS, 2013; CLARK, 2008). Then, lie on the mega event project's organizers finding a way to strategically maximize the benefits of such projects.

Due to the early stage of development on this subject, we observed a low number of independent studies focusing on issues related to planning and strategic management of impacts and legacies in mega events project, mainly on sports industry (DA COSTA et al., 2008). The Organization for Economic Cooperation and Development (OECD) commissioned two review studies. One to identify what are the factors of success and failure in organizing mega events of different natures (CLARK, 2008) and other to achieve the local development legacy from the 2012 Olympic Games (OECD, 2010). VILLANO (2009) proposed a study keeping the focus on the search for characteristics for a proper legacy managerial process based on the new production factor, the knowledge. And PREUSS (2007) published an extensive review about the strategic approaches used by mega event project organizers to measure the mega event project performance. Out of the scope of the independent studies but interesting to note is the Olympic Legacy Guide, a recommendation manual (guideline) to deal with the legacy delivery and management, published by the International Olympic Committee (IOC, 2009a). The findings, suggestions and critics related to each work will be better presented in the literature review chapter.

According to PREUSS (2007), the majority of mega event project's organizers support their planning and strategic forecasting in a best practice / benchmarking approach. Such characteristic of try to imitate strategies which have already proven to be successful at the past seems to appear in other industries, as well (CHRISTENSEN, 2001). This 'if it is good for anyone, it must be good for everyone' behavior is even broadly encouraged by project management organizations and some experts. However, the behavior of simply apply past best practices can lead to decision-making with basis on past competitive advantages. The business practices, models and strategies which generate a given competitive advantage in a successful organization, or context, confer this advantage in reason of a particular range of factors, under a particular set of conditions, in a particular time span (CHRISTENSEN, 2001). Generally, the decision-making process by benchmarking is carried out based only on past information. However, past data tends to produce a decreased organizational competence to generate future value (OECD, 2008), which increases the uncertainty, leading to increased risks.

If organizations and businesses wish to achieve success and long-lasting legacies, they must adapt themselves to a new Era. Currently, the traditional methods of solution-making have been shown limited (NORMANN; RAMIREZ, 1993) and the customers' perceived value of products and services shows increased complexity and require the incorporation of a higher percentage of innovation, technology and intelligence (CAVALCANTI; GOMES, 2000). As result, we can recognize a growing demand for innovative decision-making, i.e., new ways of planning and problem solving. Furthermore, “Strategists need to peel away the veneer of what works, and understand more deeply why and under what conditions certain practices lead to advantage.” (CHRISTENSEN, 2001)

As in the general business environment, mega event projects’ decision-makers and managers are increasingly challenged by uncertainties about value creation, budget allocation, return on investment and reevaluation of priorities regarding new sources of growth (BOUNFOUR, 2003a). In the current knowledge economy, the new sources of growth tend to turn from the tangible to the intangible (intellectual) aspects, which “… demand a new approach to work, organization, accounting and way of doing business" (ALLEE, 2000). Indeed, the intangible assets have become strategic factors for value creation by organizations, and are considered central factors to economies’ growth and competitiveness (OECD, 2008).

Nowadays, the value of nations, regions, organizations, and individuals is directly related to their intellectual capital and depends on systems to visualize, cultivate and capitalize on value-creation interactions (EDVINSSON, 2003; EDVINSSON; BOUNFOUR, 2004). The lack of such systems was the reason that motivates “The starting point of several studies related to the measurement of intellectual capital (…) to provide organization’s managers and external stakeholders (…) additional information to the traditional financial statement” (LÖNNQVIST, 2002).

As consequence, two major perspectives for intangible asset evaluation spread throughout the literature (LÖNNQVIST, 2002). The first is more concerned with capturing and expressing the performance of a particular organization or project in achieving its goals, according to a specific strategic vision. To do this, the intangible asset evaluation could be analyzed on different dimensions and require the establishment of indicators, in some cases called success factors or key performance indicators (KPIs). These indicators are key aspects that should be measured to reflect how far the organization is in its vision for success, according to predefined goals and strategies.

The second perspective focus on estimating the value of an organization, or a business, to better explain the composition of its total value or its market value. In this matter, the point is the estimation of intangible capital as sources of intangible value,

related to the employees' skills (Intellectual Capital), the organization's resources and its operation approach (Structure Capital), and the relationship with its stakeholders (Relationship and Environmental Capitals). In both cases, decision-makers and managers should concern with both to identify what would be the managerially relevant intangible assets and success factors, and to identify the activities related to improving or utilizing the assets (LÖNNQVIST, 2002).

The emergence of the intellectual capital as strategic factor for value creation and the general audience perception of poor performance raise the question if the traditional theoretical and empirical approaches to mega event projects performance measurement become inadequate. According FLYVBJERG; BRUZELIUS; ROTHENGATTER (2003) "… the cost-benefit analyses, financial analyses, and environmental and social impact statements that are routinely carried out as part of megaproject preparation are called into question, criticized, and denounced more often and more dramatically than analyses in any other professional field we know." Generally, project organizers advertise a myriad of benefits and positive impacts from their mega projects to get public and political acceptance. But, these positive impacts "… repeatedly turn out to be non-measurable, insignificant or even negative…" (FLYVBJERG et al., 2003). A hypothesis for the large numbers of disappointing results can be a detachment between the significance of the outcomes – impacts – of the mega projects (and its huge financial investment) and the benefits – value creation – expected by the large number of stakeholders and general audience. Thus, new methods of impact analysis and management are needed to support the mega event projects as instrument of growth and competitiveness to nations and organizations involved.

Some findings indicate that the intangible impacts are potentially the major economic benefits of mega events, by its nature, variety and indirect influence on economic factors in host countries/cities (NOOIJ; BERG; KOOPMANS, 2013; PREUSS, 2007;2010). Following this rationale, PREUSS (2007) proposed a potential alternative bottom-up approach to the identification of the mega events projects impacts and legacies. His approach is based on the long-term development plan for the host city/region and takes into account the tangible (infrastructure) and intangible (knowledge, image, emotions, networks and culture) structural changes delivered by a mega event project. The author named these structural changes as 'event-structures'. "When 'event-structures' change the location factors (supply side) in a city, any activity based on these changes can be considered the event legacy" (PREUSS, 2007). However, the Preuss approach is only conceptual and the existence of valid operational methods ready to use on the assessment and evaluation of mega events projects intangible aspects is still unclear.

In summary, mega event projects decision-makers and managers face a vast list of challenges, such as: a) The need of a strategic vision for the mega event project, related to the host city/country, and a proper planning and management of impacts and legacies to maximize them; b) The insufficiency of scientific information on issues related to planning and strategic management of impacts and legacies in mega event projects, mainly in sports industry; c) The emergence of the intangible (intellectual) aspects as new sources of growth and the intangible assets (intellectual capital) management as an essential task for businesses that want to succeed in the new century reality; d) The uncertainties about value creation, budget allocation, return on investment and reevaluation of priorities; and e) The lack of reliable models and performance indicators to assess the intangible aspects of mega event projects (RODRIGUES; BOUNFOUR; CAVALCANTI, 2015). The ensemble of these challenges collaborate to raise the complexity of the phenomena and to the definition of our research question: How can we measure and evaluate the impacts generated for and by mega event projects, taking into account the intangible assets and resources, with a focus on future value creation (positive legacies)?

According the existing evidences, when hosted well, the mega event project can play a significant role in city/region local development and competitiveness. It can also acting as catalyst for tourism and business destination attractiveness, business growth, urban regeneration, and improvements in environmental and local population welfare/quality of life (job creation, goodwill, skills, etc.), infrastructure and image (CLARK, 2008; OECD, 2010). Thus, a possible window of opportunity seems to be open for Brazil and, particularly, for the Rio de Janeiro region to boost its competitiveness and local development, in consequence of hosting three mega sports events in a short period of 10 years (The Pan American Games in 2007, the FIFA World Cup in 2014 and the Summer Olympic Games in 2016). Such opportunity can be true as well for other countries and cities, which aspire hosting international events and other mega projects with the aim of adapting themselves to the changing global dynamics.

1.2. Objective and methodological approach

To try to answer the research question, we decided to apply a strategic and problem solving approach to the impact measurement and evaluation of mega event projects. To guide our approach, we have concentrated on the following tree hypotheses:

A. The mega event project's decision-makers and managers should base their decisions not only on tangible socio-environment-economic analysis. The traditional

approaches to mega projects performance measurement and evaluation are insufficient to support the strategic maximization of the potential benefits (FLYVBJERG et al., 2003). Such approaches seem do not provide managerial, neither decision-taking relevant information to deal with the inherent project complexities and a positive impact and legacy management. The low perception about positive impacts and legacies is one of the big challenges faced to get the general audience acceptance to host mega event projects. “Looking forward, it is difficult to see how public acceptance of mega-projects can be maintained without greater confidence in the net benefits of these massive undertakings” (WALDER; VERMA, 2004).

B. The measurement and evaluation of the intangible aspects can help to improve the significance of the positive impacts expected by some stakeholders. The awareness of the intangibles aspects can improve the value creation process and reduce the incongruence between the size and importance of mega projects and the common poor performance perceived by the general audience. As the intangible assets have become strategic factors for value creation, and are considered central factors to economies’ growth and competitiveness (OECD, 2008), the intangible capital approach could play a leading role in reducing the mega event project inherent risks and improving an effective investment reward to the host city/country.

C. It is possible to develop an operational method to measure and evaluate the mega event projects impacts on the intangible aspects. According to the literature (BOUNFOUR, 2003b; PREUSS, 2010; RICCERI, 2008) some researchers have recently developed advanced methods for measuring intangible assets. PREUSS (2007) took the first step proposing a conceptual model to the identification of the intangible mega events projects impacts and legacies. However, the existence of valid operational methods ready to use to measure and evaluate the mega event projects impacts and legacies, taking into account the intangible assets is still unclear.

Therefore, we followed a hypothetic-deductive logic. We started by realizing a gap in knowledge concerning the measurement and evaluation of the mega event projects impacts, then we formulated the three hypotheses above and, by deductive process, we tested them with basis on the intangibles theory and the design science research (DSR) perspective. Thus, the aim of the present study is to develop a performance model for measurement and evaluation of the mega event projects impacts, taking into account the intangible assets. To accomplish our aim, we will attempt to reach the following intermediate objectives:

a. To identify and analyze the potential benefits, downsides and issues of mega projects, and the strengths and weaknesses of the prevailing frameworks for measure and evaluate the mega event projects impacts and legacies;

b. To introduce a reflection concerning the intellectual capital paradigm for value and performance evaluation in mega event projects, related to their strategic planning and management with focus on promoting positive impacts and legacies, and consequently, value/wealth creation;
c. To propose a conceptual framework and an operational model to measure and evaluate the mega event projects impacts taking into account the traditional structures of measurement and evaluation of the intangible assets;
d. To assess the validity of an operational version of the conceptual model for provide information for effective strategic management and decision-making in mega event projects with focus on increase the likelihood of successful projects, as well as inducing value creation (positive legacies), competitiveness and local development.

To justify the study relevance and suitability, we expect to contribute to fill the gaps identified and help nations and cities which aspire hosting mega international events and other mega projects with the aim of adapting themselves to the changing global dynamics towards a modern urban development strategy. Thus, in an attempt to create a new system to serve a real human purpose, we designed the study in three main phases: Concept definition, model development and model validation. The figure 1 summarizes our methodological approach in a structured manner and the following paragraphs describe how the current thesis is organized around its seven chapters.

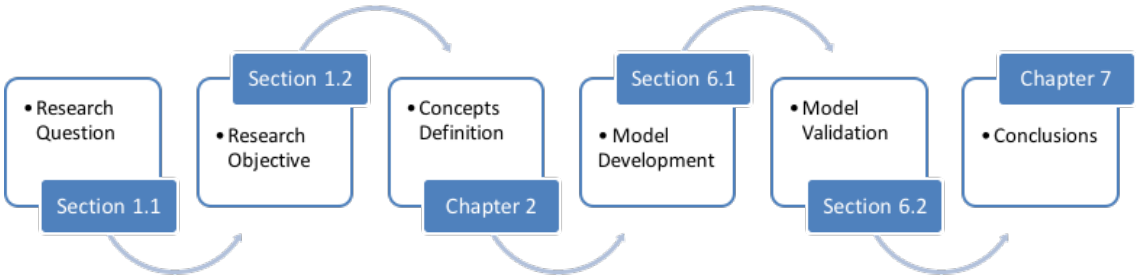


Figure 1 - Proposed research approach

The current introduction chapter (chapter 1) aims to provide a general overview of the research question, presenting the context, challenges, opportunities and main gaps identified regarding the measurement and evaluation of the impacts generated for and by mega event projects with a focus on future value creation (positive legacies). The chapter 1 ends by presenting the study objectives, the methodological approach chosen to answer the research question and the three assumed hypotheses to be verified.

The chapter 2 provides a literature review, in a critical approach, of the main subjects that, in our point of view, will allow better understand concepts, definitions, assumptions and constraints. It is structured in tree main sections. The first section begins with the

identification of the mega projects main characteristics, issues and benefits; the mega event projects specific context; and the exploration of the strengths and weaknesses of the established frameworks for measure the mega event projects impacts and legacies, specifically on the sports industry. The second section has the goal of introduce a reflection about the paradigm changes on the stakeholders' value and performance perception concerning the strategic planning and management process, as well as to analyze the role of the intangible assets as strategic factors for value creation and central factors to economies' growth and competitiveness. Our focus is to understand how the constituents of the value creation process, other than the local macroeconomic outcomes, works to promote positive impacts and legacies for the host region and country. Finally, the third section presents the fundamentals of the intangibles theory; a brief review of current models and approaches to deal with the intangible factors; an analysis of principles and fundamentals of the key models already published to measure intangibles on the context of the study, and the manner which they capture the information.

The chapter 3 presents and explains the research design paradigm chosen to persecute the general objective of the study. It also presents and describes how was conducted each of the research main phases: Concept definition, Model development and Model validation. The chapter 4 provides the main vision and a brief description about the tourism industry that was used as research field both for the model development and validation. The research methods chapter (chapter 5) presents the choices, assumptions, methods and propositions concerning the last two phases of our research design (see table 3), the model development and the model validation.

The chapter 6 presents the results and discussion of the model development and validation. Based on the gaps and challenges identified on the introduction (chapter 1) and findings from the literature review (chapter 2) we developed a conceptual framework and proposed an operational model (section 6.1) for measure and evaluate the mega event projects impacts, taking into account the intangible assets, with a focus on future value creation (positive legacies). Subsequently, during a validation case-study (section 6.2), we crossed the results of the proposed model outcomes with the mega event projects challenges, issues, context, and implications for action to empirically assess if the operational model validates (or not) the study hypotheses. Finally, the conclusions chapter (chapter 7) presents the study conclusion, the final considerations, the limitations, and possible developments for future researches.

2. LITERATURE REVIEW

The present literature review chapter provides, in a critical approach, a review of concepts, definitions, assumptions, constraints, challenges and opportunities about the subjects which, in our point of view, will allow a better understanding of the measurement and evaluation of the impacts and legacies generated for and by mega event projects with focus on increase the likelihood of successful projects, as well as inducing value creation, competitiveness and local development. This chapter is structured in tree main sections. The first section aims are to identify the mega projects main characteristics, issues and benefits; the mega event projects specific context; and to analyze the strengths and weaknesses of the established frameworks for measure the mega event projects impacts and legacies, specifically on the sports industry. The second section has the goal of introduce a reflection about the paradigm changes on the stakeholders' value and performance perception, concerning the strategic planning and management process, as well as to analyze the role of the intangible assets as strategic factors for value creation and central factors to economies' growth and competitiveness. Our focus is to understand how the constituents of the value creation process, other than the local macroeconomic outcomes, works to promote positive impacts and legacies for the host region and country. Finally, the third section aiming to present the fundamentals of the intangibles; a review of current models and approaches to deal with them; an analysis of principles and fundamentals of the key models already published to measure intangibles and the manner which they capture the information. This analysis will lead us to understand the best developing practices and in what extend the models can measure the accumulation and usage of intangible assets in a given organization or business.

2.1. Mega projects

2.1.1. Definitions, characteristics, elements and constituents

The term 'mega projects' dates the late 1970's and was first used, approximately at the same time, by the Canadian Government and by Bechtel Corporation, respectively, to refer to the former massive energy developments projects, and to present the latter general portfolio of very large scale projects (ALTSHULER; LUBEROFF, 2003). Traditionally, mega projects pertain to two main types of schemes. The first concerning the infrastructural and urban planning projects, such as the renewal of old industrial and/or port zones; the construction of huge buildings with "strong symbolic significance" (such as certain museums and business towers); and new transport facilities (high-speed rail trains, tunnels, bridges, express highways, etc.). The second scheme regarding the

complex content projects, such as electricity and/or nuclear plants; offshore construction; military weapons systems; modern information and communication technology (ICT) systems (ORUETA; FAINSTEIN, 2008; PRIEMUS; FLYVBJERG; VAN WEE, 2008).

Nowadays, however, it is somewhat difficult to separate the concepts of complexity and infrastructure in two different groups. Following such perception and with basis on the ideas of FLYVBJERG et al. (2003) and VAN MARREWIJK et al. (2008), we can define the mega projects as large scale, complex, politically sensitive, costly, mega infrastructure projects, involving a large number of stakeholders, usually commissioned by governments and delivered by private enterprises.

Although the mega projects only have been 'labeled' in recent decades, they have already exist since the antiquity. There are a lot of examples such as the construction of the Pyramids (around 2560 - 2540 BC); The Coliseum (around 70 - 80); The European explorations to Asia and Americas (around 1400 - 1500); The two World Wars (1914-1918 and 1938-1945) and the reconstruction projects to deal with the damages caused by both conflicts; and The 'Space Race' (during the 1960's and 1970's) between the former Soviet Union and the United States of America for the supremacy in space exploration.

At the 1980's was observed a decrease in the pace of implementation of this kind of projects, mostly in the urban planning scheme (ALTSHULER; LUBEROFF, 2003). More recently, however, we can see the revival of interests about mega projects all around the world. Such 'new generation of mega projects' tends to address the needs of a modern urban development with office-based business, tourism and leisure services, and seems to be aligned to a planning agenda with focus on economic growth and competitiveness through an advantageous insertion in the globalized economy. (OLIVEIRA, 2012; ORUETA; FAINSTEIN, 2008). Therefore, the urban regeneration has become a priority in the governmental agenda, both in developed and emerging countries. And the economic growth could be due to a rational exploitation of the local natural vocations and competitive advantages (OLIVEIRA, 2012).

To better illustrate the new generation of mega projects, ORUETA; FAINSTEIN (2008) proposed four non-exclusives categories: a) Regeneration of waterfronts; b) Recovery of old manufacturing and warehouse zones; c) Construction of new transport infrastructures or the extension of existing ones; and, d) Renovation of historic city districts. In a contribution effort, we propose the inclusion of two more categories to the mega project's new generation taxonomy: e) the modern ICT systems, such as urban operational and control centers and Internet/telephone based networks; and f) the mega events projects, such as sports competitions or culture festivals.

An important contribution to illustrate the characteristics of mega projects was given by FRICK (2008). She proposed a framework, called the “six C's”, which gathers the main characteristics and summarizes the many facets of mega projects. According to her, mega projects are colossal, captivating, costly, controversial, complex, and has control (management) issues (figure 2).

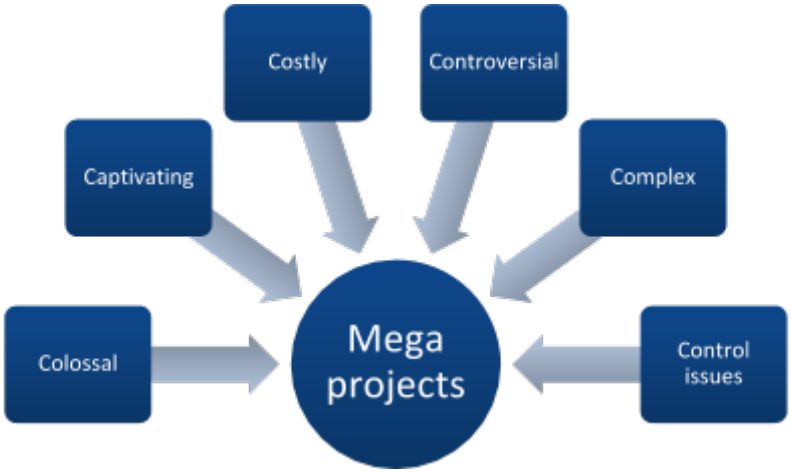


Figure 2 - The six C's mega project characteristics (adapted from Frick, 2008)

Mega projects are colossal regarding its scale, size and scope, demanding a huge amount of work and resources to designing, developing, planning, implementing and managing. The project organizers often seek a monumental endeavor during, and after the implementation of the project, which calls the attention of the general public (Frick, 2008), and meet their expected requirements of marketing and self-promotion. Other way to call the attention of the public to the project and have more extensive influence is provide a sense of astonishment and wonder, captivating the stakeholders by the project's aesthetic design and technical/technological accomplishments. FRICK (2008) refers to such sense as 'Technological sublime'.

This concept is not new. It can be found in the work of Marx (1964)[1] and Nye (1994)[2] and refers to the “... experiences of awe and wonder (...) which people have had when confronted with particular natural sites, architectural forms and technological achievements” (Nye, 1994)[2]. FRICK (2008) believes that, despite of the little attention devoted to this characteristic in mega projects literature, the political employment of the technological sublime would help to understanding the ‘new dimension’ of the evolution of the mega project's design and optimism bias. Such effect can be an interesting frame of reference for understanding the decision making, underlying motivations and rhetoric

[1] Marx, Leo (1964), The Machine in the Garden, Oxford: Oxford University Press
[2] Nye, David (1994), American Technological Sublime, Cambridge, MA: The MIT Press

from some stakeholders and political leaders advocating for mega landmarks and not only mega projects (FRICK, 2008; OLIVEIRA, 2012). Other 'new' characteristic of mega projects, perceived by ORUETA; FAINSTEIN (2008), for captivate the public opinion and generate optimism bias, is to display a greater environmental understanding and commitment to urbanity than the projects in the past era.

Concerning the costs, they are logically high to deal with the huge scale, size, scope, complexity and to cause the awe and wonder sensations required to attract the attention of the public (FRICK, 2008). But, there is no consensus about how much units of currency characterizes a mega project`s threshold. ALTSHULER; LUBEROFF (2003) estimated the mega projects cost at least US$ 250 million (in a 2002 basis). FLYVBJERG (2008) focused his analysis in a range of costs from US$ 23 million to US$ 11 billion (in 2006 values). And ZHAI; XIN; CHENG (2009) defined, as inclusion criteria for their study, the threshold of about US$ 140 million (in 2009 values).

Mega projects are controversial. The main sources of controversy are the funding, the mitigation packages and the impacts on third parties (FRICK, 2008). The degree of controversy will depends more on the potential displacements or perceived negative impacts in business, residence and/or environmental issues by some stakeholders. But, as mega projects are multifaceted and usually have a huge number of stakeholders, they can became controversial because of the different intrinsic interests involved (FRICK, 2008). A common characteristic observed in recent mega projects is situate them in underused locations, landfills or abandoned industrial sites (ORUETA; FAINSTEIN, 2008). With this concern, the project organizers seek to mitigate the perceived negative impacts and displacements, and can introduce the motto of urban restructuration as a positive impact of the mega project.

Another source of controversy is the approach of funding and management of mega projects by public-private partnership (PPP), because of the intrinsic conflicts of goals and interests within the partners. An uncomfortable factor of controversy, frequently cited within the literature, is the strategic behavior of cost underestimation in the project's initial phases. Of course, during the project's life cycle the costs estimation increases to attempt the operational demands, dynamism and complexity, leading to cost overruns.

The degree of controversy can also be affected by risks and uncertainties (FRICK, 2008). As mega projects are becoming increasingly complex, we can find out several sources of risks and uncertainties, mainly in terms of design, funding, implementation and mixed-utilization by different stakeholders (FRICK, 2008; ORUETA; FAINSTEIN, 2008). According BACCARINI (1996), complexity is a critical project concern and the way how it might be managed is of significant importance. There are different dimensions of complexity that need to be further studied to provide important assistance for the

selection of most suitable managerial approach and project management tools (IPMA, 2008).

Other interesting characteristic is the growing convergence of North American and European mega projects, regarding their physical form, financing scheme, and the role played by the state (ORUETA; FAINSTEIN, 2008). Unfortunately, despite of the numerous mega projects taken placed in Asia, Latin America and Africa, the findings presented in this section must be carefully generalized because of the insufficient empirical information available on mega projects outside Europe and North America (FLYVBJERG, 2008; MILLER, R.; LESSARD, 2008).

Even being large scale, complex, controversial, politically sensitive, costly and involving a large number of stakeholders, the mega projects seem to have a key role on public policies and investment. The reason relies on the local economic growth potential; the internal resources catalyst process; and the social, environmental and economic development acceleration. These benefits seems to be delivered by some success factors, such as tourism and business destination attractiveness; business growth; urban regeneration; and improvements on infrastructure, image, environment and local population welfare/quality of life (job creation, goodwill, skills, etc.) (CLARK, 2008; KASIMATI, 2003; OECD, 2010; OLIVEIRA, 2012; ORUETA; FAINSTEIN, 2008; PREUSS, 2007; ZIMBALIST, 2010).

Recently, we can observe, all around the world, a rise in the governmental and investment banks interest about mega projects aligned to an agenda to stimulate the benefits and factors abovementioned. As in the current knowledge economy the intangibles aspects have become strategic factors for value creation and are considered central factors to economies' growth and competitiveness (OECD, 2008), such mega projects tend to focus on office-based business, urban development, tourism and leisure services (ORUETA; FAINSTEIN, 2008).

2.1.2. Mega projects main issues

Notwithstanding its increasing number and key role on public investment and economic growth potential, the body of knowledge of mega projects remains bounded. It is difficult to find out scientific evidences and the involvement with mega projects is even discouraged in the practitioners' arena. According one of the bestseller books for project managers, "... mega projects should be left to those companies that have the facilities, expertise (...) to handle the situation" (KERZNER, 2009), due its complexity and difficulty in managing.

Unfortunately, this situation led to an actual scene of poor performance in terms of public support, economic and environmental outcomes. The incongruence between the increasing number, size and importance of mega projects and it's poor performance seems to be so notable that FLYVBJERG et al. (2003) coined the term 'Megaproject Paradox' to describe it. Usually, project organizers advertise a myriad of benefits and positive impacts from their mega projects to get public and political acceptance. But, these positive impacts "… repeatedly turn out to be non-measurable, insignificant or even negative…" (FLYVBJERG et al., 2003).

Mega projects issues and problems are the same over the years: a) Cost overruns; b) Delays; c) Short use; d) Falling Revenues; e) Overall failure (BRUIJN; LEIJTEN, 2008). According the same authors, "There are at least two generically formulated pitfalls in the implementation of mega-projects". The project became unmanageable in terms of schedule and costs, and/or is impoverished as to its substance, with too little ambition and not sufficiently future-orientation (BRUIJN; LEIJTEN, 2008).

The main control and management issues concerning the mega projects are in terms of uncertainties and difficulties regarding decision-making, funding and operations (FRICK, 2008). Within these three domains, we can bring up several issue topics, such as: a) social and political support coalition; b) marketing and promotion; c) project complexity and dynamism; d) inadequate deliberation about risk and demands; e) cost overruns; f) project culture and rationality; and, g) public-private partnership conflicts of interest (ALTSHULER; LUBEROFF, 2003; FLYVBJERG et al., 2003; ORUETA; FAINSTEIN, 2008; PRIEMUS et al., 2008; VAN MARREWIJK et al., 2008), as possible sources of poor performance.

Mega projects need widespread social and political support to succeed in reason of their magnitude on large areas of the region where they occurs, the big cost and the environmental impact they could create (ORUETA; FAINSTEIN, 2008). Such need of support made the foundation of a kind of negative impacts mitigation concern by governments and project organizers (ALTSHULER; LUBEROFF, 2003). But, if there are substantial costs to the environment or the neighborhood involved, they were rarely implemented, phenomenon which ALTSHULER; LUBEROFF (2003) called "do-no-harm" paradigm.

The effort in mitigating the adverse effects of mega project, can take the form of an extensive and costly structure (WALDER; VERMA, 2004), which in turn contributes to cost overruns. Often leaded, "with rare exceptions", by private partners with direct and immediate interests, these support coalitions assume several roles. Since the attempt to avoid increases in local taxes or create proposals of alternatives sources of funding such as lottery revenues or local taxes for visitors — which ALTSHULER; LUBEROFF (2003)

described as “locally painless project financing” —, as well as acting as a competitive pressure tool between local and federal spheres to guarantee funding. As mega projects are often founded or supported by Federal investment, albeit its locally-oriented conception (ALTSHULER; LUBEROFF, 2003), the creation of such social and political support can make the difference between the mega project’s implementation or not.

The actions of marketing and promotion also play an important role contributing with cost escalation and the efforts in mitigating the adverse impacts. As in all kind of marketplace, competition among nations and cities depends on the choice of consumers. Then, the local governments and project organizers have invested in advertising to build comparative advantages and attract investors, boosting the importance of the mega project spectacularization (OLIVEIRA, 2012). Local groups of politicians and coalitions of supporters often make campaigns to promote the potential benefits of ‘magnificent’ projects and engage the local population. Such issue of building coalitions, undertaking mitigation efforts, and widely promoting the mega projects seems to remain a dominant characteristic in modern-day mega projects (WALDER; VERMA, 2004).

In some projects the motto used is the promotion of local economic development that will benefit all the citizens (LEHRER; LAIDLEY, 2008; ORUETA; FAINSTEIN, 2008). However, it remains unclear how and in which magnitude the changes on public funds destination, from their original allocation on programs that can most significantly benefit the majority of the citizens to the mega project can contribute to the economic development. A good example is when subsidies are provided in the form of tax incentives (ORUETA; FAINSTEIN, 2008).

As have been already mentioned previously, the mega projects are becoming increasingly complex and dynamic. The complexity is multidimensional, its extent and impacts are so vast that generated the development of a field of science to study it, known as Theory of Complexity. In a pragmatic view, BACCARINI (1996) proposed, in his concept review, that project complexity could be “…interpreted and operationalized in terms of differentiation and interdependencies.” Following this rationale, BRUIJN; LEIJTEN (2008) proposed an analysis of mega projects complexities in two dimensions: technical/technological and social. According the authors, the complexity with regard to the project's technical/technological system could be determined by seven most important factors: a) degree of robustness; b) degree of innovation regarding the technology involved; c) degree, or possibility, of divisibility; d) degree of coupling of mutual links; e) availability of fallback option or alternative plans; f) variety of functions; and g) way of implementation. Both the ‘sides’ in the range of variability of such factors have advantages and disadvantages depend on the project demands and environment, as we can see in the following paragraphs.

The robustness refers to the solidity of the technological design of the project, its detailing and previous implementation. The more robust a project is, more the chance of predictability and manageability. In other words, you can reduce the risks of something goes wrong technically, but this approach gets the cost higher. On the other hand, less robustness increases the chance of failure, due to the less predictable and manageable environment, but also raises the chances of enrich the innovative character of the project by finding opportunities for adjusting the needs in the course of its implementation in a cheaper, and/or better, approach.

The innovative degree of the technology involved modulates the complexity as a function of the unprecedented utilization. The more recent the technology involved, greater the complexity of the project. It's true for both a first-used technology and also for a non-previous applied technology under the same project conditions. As the mega project organizers usually seek to deliver a monumental endeavor applying the concept of the technological sublime — mega projects "… sometimes reflect the cutting edge of modern technology..." (FRICK, 2008) — we consider the innovative degree of the technology involved one of the most important factor regarding the technical/technological dimension of the complexity in mega projects.

The degree of divisibility can reduce the complexity if the elements of a given project can be divided, and each part can work and managing independently. "Divisible projects usually have more simultaneous processes (...), which can reduce the consequences of time and cost overruns..." (BRUIJN; LEIJTEN, 2008) and the problems can be isolated without affecting the whole project. In contrast, a huge number of activities without linkage increase the complexity due to a bigger management effort and personal demands.

Yet according BRUIJN; LEIJTEN (2008), "Projects are systems consisting of components or subsystems with coupling (mutual links) between them". The intensity of coupling within two systems will determine if an occurrence in one element will affect the other. If there is a high intensity (tight) coupling within two (or more) system components, any problem in one has a big probability of generates a negative effect on the other(s), increasing the complexity. This phenomenon could lead to a domino effect, for example, the blackout events in modern electricity networks. In low intensity (loose) coupling circumstances, a problem or failure does not necessarily will collapse the entire system.

The availability of fallback options or alternative plan(s) doesn't have a direct link with complexity, but with the probability of implementation. The effort of planning one (or more) alternative(s) plan(s) could involve high complexity, but could assure the project implementation. The alternative plans play the role of a reserve of contingence. In case of failure, the alternative plan can be provided in the place of the original one. On the

other hand, the unavailability of alternative(s) plan(s) could lead a less complexity, but can derail the entire project in case of failure or problems.

Other factor that has a direct link with project failure is the variety of functions of a given project. Although BRUIJN; LEIJTEN (2008) stated that "... the more functions a project has, the smaller the risk of total failure", of course it is true only for a moderate number of functions. The authors' rationale is based on the degree of divisibility, and takes into consideration that if there are a greater number of functions some problems can be isolated without affecting the whole project. But, if a project has an excessive number of functions its manageability could be affected leading to an increase in complexity.

Finally, with regard to the technical/technological system, the project complexity can be affected by the way of implementation. A given project can be implemented in an incremental phased or in a radical jump approaches. Both have advantages in manageability. In the first one, it is possible to learn and adjust the deliverables during the project phases. In opposition, in radical jump approach "... all the technological and social complexity involved (...) is concentrated on a single moment" (BRUIJN; LEIJTEN, 2008). Because of the scale, size, scope and the present control issues, we suppose the radical approach seems to be too risky regarding the mega projects environment.

The complexity with regard to social iteration within the different stakeholders (players) involved has six factors (BRUIJN; LEIJTEN, 2008): a) degree of dependence on stakeholders preferences and aims; b) degree of uniformity on preferences of the involved players; c) degree of stability on preferences of the involved players; d) degree of third-party blocking power; e) length of transformation time; and, f) degree of influence on the social environment. Although, in the original paper the authors focus only on users, we preferred to use a broader scheme referring to all stakeholders (players) involved. As mega projects usually have a huge number of stakeholders there are different intrinsic interests (FRICK, 2008), rationales, cultures, visions and expected benefits (value-creation drivers) involved.

The same way the technical/technological, the social iteration system also has advantages and disadvantages according the 'side' in the range of variability of the factors. The degree of dependence on stakeholders' preferences and aims has a critical role regarding the social complexity. The greater the degree of stakeholders' influence, the greater the difficulty of manageability. But at the same time, the greater the chance of the project meets their needs and aims, and consequently, their value-creation drivers. The level of shared vision and preferences also affects the manageability. If there is a complete unanimity or uniformity according the project, easier the management effort.

However, a certain multiplicity of opinions can enrich the police and innovative environments of the project.

The degree of stability on preferences of the involved stakeholders also module the manageability. During the life cycle of the project, preferences and aims can change due to changes in environmental factors, overall conditions, technical development, new technologies, etc. When the dynamics of these changes are extreme, and preferences and aims are subject to constant changes, the manageability is affected. This kind of changes can occur even in a post-implementation stage.

There are multiple sources for such dynamism. The needs of the stakeholders can be revealed in different moments, can change as the time passes and can reveal differently under diverse project context. During the implementation, some stakeholders may change their original requirements or introduce new requirements based on the original. “At the same time, some potential stakeholders may find that their benefits could be affected, and therefore claim their expectations toward the project” (ZHAI et al., 2009).

The blocking power refers to the power of certain stakeholders or third parties in the decision-making scheme. “When there is very little blocking power, a commissioning party alone can determine the implementation of a project, whereas in the presence of a great deal of blocking power everything has to be laid before third parties” (BRUIJN; LEIJTEN, 2008). The length of transformation time, i.e. the period required for implementation, also affects the complexity. The longer it is, the greater the uncertainty because of the increased probability of changes in stakeholders’ preferences, technical/technological developments, social conditions, negotiating teams, new policies, costs, etc. Finally, the degree of influence on the social environment can contribute to an increased uncertainty as “the greater the impact on the existing environment, the greater the chance that players are activated and attempt to exert influence on the projects implementation” (BRUIJN; LEIJTEN, 2008).

The inadequate deliberation or inaccuracy about risk and demands is other major control and management issue in mega projects. Risk analysis are generally done by technical staff and do not consider the changes required to address new stakeholders needs, project specifications and designs, the late additions in scope, political influences, embellishments, some mitigation efforts, etc. (ALTSHULER; LUBEROFF, 2003; WALDER; VERMA, 2004). Despite the huge investment on mega projects, “… little systematic knowledge exists about the costs, benefits and risks involved” (FLYVBJERG, 2008). To illustrate this scenario, FLYVBJERG (2008) presented data from 210 transportation infrastructure projects (27 rail and 183 road), located in 14 countries over five continents, ranging from US$ 23 million to US$ 11 billion (in 2006 values). These projects demonstrated an average passenger demands forecasting overestimation of

65,2% (95% IC of 23,1 to 151,3) for rail projects and an average traffic underestimation of 8,7% (95% IC of 2,9 to 15,9) for road projects. In others words, for more than nine out of 10 rail projects there were passengers demand overestimation. For road, 50% of the projects had more than 20% difference between the forecasted traffic and the counted in the first year of operation.

The scheme of inadequate deliberation, or inaccuracy, also occurs about costs, generally leading to cost overruns. The literature is full of examples, more or less famous, of mega projects which reports cost escalation, the Concorde airplane, the Sydney's Opera House, various editions of the Olympic Games, numerous others highways, bridges and tunnels, etc. (ALTSHULER; LUBEROFF, 2003; WALDER; VERMA, 2004). Despite all scientific progress in estimation methods, construction technology and modeling process, accurate costs forecasting remain major source of uncertainty and risk in the development and management of mega projects (FLYVBJERG, 2008). In a database of 258 mega projects in transportation sector (58 of rail transport, 167 of road transport and 33 fixed, comprising bridges and tunnels), FLYVBJERG (2008) founded cost overruns in almost nine out of 10 projects. The average cost rises 44,7% (±38,4) for rail, 33,8% (±62,4) for fixed and 20,4% (±29,9) for road projects compared with the first estimates. According JENNINGS (2012), "… the under-estimation of project costs is the norm in organization of the Olympic Games…" with an average cost overrun equal to more than 200% from the bidding estimates in all Olympic Games projects since 1976.

For PRIEMUS et al. (2008) and VAN MARREWIJK et al. (2008) these cost overruns are due to operational dynamism and financial, technological and social complexities. The contributing factors are changes in exchange rates between currencies; price increases; expropriation costs; low programmed contingencies; culture and rationality conflicts; incomplete data and gaps arising between talk, actions and decisions; and safety and environmental demands. For ALTSHULER; LUBEROFF (2003) and FLYVBJERG (2008), on the other hand, the cost overruns lie on the realm of power game and political influences for incentives, funding and public (voters) support, rather than planning and operations. There is a strategic behavior of cost underestimation in the project's initial phases in order to make easier the project approval. During the project life cycle, the increasing costs of building coalitions for social and political support, the mitigation efforts and an 'optimist bias' can play a major role in cost escalation.

This approach of cost underestimation and benefit overestimation has been used as a modus operandi for project approval. The scenario of bias and inaccuracy both for demands and costs is the same order for at least 30 years (FLYVBJERG et al., 2003) and is not restricted to mega projects, it also occurs in smaller ones. "Together, low

estimates for cost and high estimates for demand tend to make a lot of projects look viable when they are not" (WALDER; VERMA, 2004).

Besides the cost underestimation and benefit overestimation behavior, there are others factors interesting to note regarding the project culture. Indeed, according VAN MARREWIJK et al. (2008), there is no only one-project culture but different cultures operating at the same time, "Megaprojects clearly bring together, under various contractual arrangements, differing and competing partners, interests, values and modes of rationality (ways of doing and thinking)". The mega project culture is ambiguous, and has fuzzy limits and dualities between the different stakeholders involved. The management and control are operated at the same time by many collaborators. The rationality is incomplete and imperfect, and decision-makers rarely look for optimal solutions, as they never have sufficient information to be able to do so. Generally, decisions are taken when solutions, problems, participants and choices flow around and coincide at a certain point. Other contributing factor to unaligned decisions is the multiple competencies involved in mega project, once each of which are characterized by their specific rationalities (VAN MARREWIJK et al., 2008).

As mega projects have been characterized by conflict, uncertainty and poor cooperation between partners, the concerns about the relation between mega project culture and success stakeholder collaboration has increased in last decade (VAN MARREWIJK et al., 2008). For the authors, these different project cultures and rationalities, in addition to the project design, play a role in determining how the project staff cooperates to achieve the planed objectives or not. Other factor strictly correlated with the project culture and collaborators cooperation is the currently frequent approach of the public-private partnership (PPP) to the development and implementation of mega projects, because of the intrinsic conflicts of goals and interests within the partners. There seems to be a kind of public-sector conception and leadership to wider the public support, secure resources and mitigate the possible conflicts, which ALTSHULER; LUBEROFF (2003) called 'public entrepreneurship'. After this initial conception phase, the idea could be 'sold to prospective constituencies' to implementation (ALTSHULER; LUBEROFF, 2003).

In theory, the role of the public sector is to safeguard the citizenship values while the private sector ensure "... a better market orientation, more dynamism, and flexibility" (PRIEMUS et al., 2008). According VAN MARREWIJK et al. (2008) there are two types of PPP most discussed in the recent literature, the concession and the alliance models. The alliance model consists of a joint venture between private partners and one or more state agencies. In the concession model the private partner, on the other hand, has the integral responsibility for design, construction and financing. Both models are based on

the idea that the involved parties interacting on the basis of a set of contracts and associated documents that rule their relationships and contributions. Contractual specifications, typically, comprise many complex documents with numerous points of ambiguity and even disagreement between the parties. Such points are regularly a source of controversy.

"Looking forward, it is difficult to see how public acceptance of mega-projects can be maintained without greater confidence in the net benefits of these massive undertakings" (WALDER; VERMA, 2004). At the same time, it seems not to be a 'one size fits all' solution for performance improvement on mega projects. Hence, rely on practitioners and researchers test and/or develop different and innovative approaches to deal with the presented issues and improve the accountability, decision-making and management of mega projects and its impacts.

BRUIJN; LEIJTEN (2008) proposed a 'process management' approach based in the involvement of a network of relevant parties with two basic pillars, interaction and redundancy. Since the level of complexity and uncertainty of the mega project has a rising tendency, the "... decision making, designing and implementation regularly take place in a complex social environment of actors..." (BRUIJN; LEIJTEN, 2008) either pro and con, and in this context, the traditional project management seems to be insufficient and misleading.

The interaction refers to the design of a process of involvement of stakeholders with important power, specifically whose try to block the project or can joint expertise on it. Then, the project team can deal with the main sources of social and technical complexities, previously described. The redundancy refers to a deliberately created function overlapping within the project effort. In a field of great uncertainty and complexity, the involvement of different expertise and competences in cross-functional activities creates the opportunity for mutual checks and can contribute to: a) get prior agreements, b) foresee and/or arise early possible major problems, c) get the involvement and shared responsibility for a given outcome and d) foster an innovative nature from the project by the confrontation of ideas.

For FLYVBJERG (2008) "the challenge is to change the rules of the power play that governs forecasting and project development". One possible approach is improving and extending the compliance requirements, mainly about governance and transparence. One alternative to do that is investing on the measurement and disclosure of the intangible assets. The literature shows some findings that the reporting of intangibles aspects could have a positive impact on performance by improving internal controls and risk management, raising the quality of strategic decision, increasing overall

transparency for the stakeholders (OECD, 2013b) and reducing the information asymmetry.

2.1.3. Mega event projects specificities

The mega event projects can be identified as part of the group of 'new generation of mega projects' proposed by ORUETA; FAINSTEIN (2008). This kind of mega projects are organized on the frame of a mega event, such as sports competitions (Olympic Games, World Championships, etc.), cultural festivals, trade and exhibition fairs, political summits and conferences. They also tend to address the needs of a modern urban development with office-based business, tourism and leisure services, and seems to be aligned to a planning agenda with focus on economic growth and competitiveness. (OLIVEIRA, 2012; ORUETA; FAINSTEIN, 2008).

In last decades, the application process to host mega event projects is becoming increasingly popular. In general, the reason for such attention relies on the potential outcomes relating to these events as trigger for local economic development (CLARK, 2008; PREUSS, 2007). Such economic development can be explained, to a certain degree, by the increased host city/country attractiveness and audience by the international media; the increase in external capital flow to host city/country; the tourists attraction; the spread of the spirit of optimism among the citizens; the internal resources catalyst process; urban regeneration and the socioeconomic development acceleration (CLARK, 2008; KASIMATI, 2003; PREUSS, 2007).

The literature points out other numerous potential benefits from hosting a mega event, such as the capital flow to host city/country; the facilities and infrastructure construction, or upgrade; the lower transportation costs due improved networks; the increase in tourism and tourists spending; the advertising effect that showcase the host city/country as a potential tourist or business destination; an increase in civic pride; more local business opportunities; better inter-regional cooperation; the improved local sense of community; the improved perceived abroad image and reputation of the host city/country; the marketing of the host city/ country; the entertainment and happiness of the citizens; the public welfare; the sense of consuming or investing locally; the motivation of volunteers; the human resources skills development; additional know-how and employment; the motivation to a more active life; and a local identity and cultural heritage re-shaping. (BOUKAS et al., 2013; CLARK, 2008; KASIMATI, 2003; PREUSS, 2007;2010; ZIMBALIST, 2010).

However, mega event projects also present high risk of potential downsides, such as excessive costs; poor urban spaces use; inadequate planning; unneeded and underused

facilities or infrastructure, known as ‘white elephants’; high opportunity costs; temporary crowding-out effect; increases of property rental; socially unjust displacement and re-distributions; high risk of creating high public debts; increased costs and taxes; and, poor performance, i.e., inability to deliver all the benefits, planned or not (CASHMAN, 2010; FLYVBJERG et al., 2003; KASIMATI, 2003; PREUSS, 2007; ZIMBALIST, 2010).

All these benefits and downsides delivered by the mega events are regularly referred in the literature as impacts and legacies, but there are different concepts of legacy (PREUSS, 2007). In a simplistic definition, impacts can be understood as the immediate outcomes or effects, and legacies as the lasting impacts arising from mega event projects. For the International Olympic Committee (IOC), Olympic Games rights holder, the legacy captures the value generated by sports facilities and public improvements delivered to the citizenship or to host city/country sports organizations not only during the event, but also after the Games. Although it embraces the notion of value creation from the project, such definition gives a false understanding of legacy as entirely positive, denying the existence of lasting downsides risk.

PREUSS (2007), also finding the IOC definition somewhat narrow and taking into account the complex and uncertain nature of the mega event projects legacies, proposed a more comprehensive perspective. According to him, the legacy should be considered in the widest possible terms and be analyzed in respect of five dimensions: a) the degree of planned/unplanned structure; b) the degree of positive/negative structure; c) the degree of tangible/intangible structure; d) the duration and time of a changed structure; e) the space affected by changed structure. Finally, he proposed a legacy definition, which will be assumed by the present study: “Irrespective of the time of production and space, legacy is all planned and unplanned, positive and negative, tangible and intangible structures created for and by a sport event that remain longer than the event itself” (PREUSS, 2007).

Notwithstanding the risks of potential downsides and the failure of some researchers (KASIMATI, 2003; MATHESON, 2002; OLIVEIRA, 2012; ZIMBALIST, 2010) in collecting enough scientific evidence to support the delivery of direct economic benefits in hosting two of the bigger and well-known mega events, the Olympic Games and the FIFA World Cup, the mega event project interventions could result in an improved infrastructure that can generate significant intangible benefits to the host city/country. For the IOC “The Olympic Games symbolize a unique venture as it has the power to deliver a significant experience which can considerably change a community, its image, and its infrastructure (…) as well as a long-lasting legacy for the host city and host communities” (IOC, 2009b).

According the literature (BRUNET, 1995; CLARK, 2008; OLIVEIRA, 2012), the 1992 Barcelona Olympics is considered a successful mega event project in the point of view of the modern urban development strategy. It reached a combination of urban and infrastructure modernization with a positive economic catalyst effect - "greater capitalization, growth of the service sector, internationalization, attractiveness, centrality, productivity, competitiveness" (BRUNET, 1995) - that was perceived by the local population as well as by leisure and business tourist (BRUNET, 1995; OLIVEIRA, 2012; PRONI et al., 2008). However, some authors (OLIVEIRA, 2012) consider that the benefits obtained by Barcelona shall not be entirely taken on the supposed positive outcomes brought by the Olympic Games. According to them, the Games and its benefits were possible because of the extremely favorable political and economic conditions derived mainly from the abundant availability of funds due to the Spain's adhesion into the European Community.

BRUNET (1995) found some figures of potential positive economic impacts in employment (a fell from 18.4% to 9.6% in the general rate of unemployment from 1986 to 1992), construction (increase of 34% in the surface area of parking lots, 23% in the number of housing, 13% in the commercial venues, 12% in the offices and 5% in the hotels, during the years 1988 to 1991) and in the preference of enterprises to locate themselves in Barcelona (the position in the ranking of European cities fluctuated from the 8th position in 1991, to the 13th position in 1992 to finally keep itself in the 10th position between 1993 and 1995) highlighting that the 1992 Barcelona Olympics also acted as a potential protective buffer against the economic crisis that affected Europe in the beginning of the 1990's. But, he also collected some evidences of economic downsides, such as an increase in 20% in the accumulative cost of living index, from 1983 to 1992, above the rest of Catalonia, "…the market price of new and previously-built housing between 1986 and 1992 grew, respectively, 240% and 287%" (BRUNET, 1995).

The finance investment plan for the 1992 Barcelona Olympics focused in projects on an order of preference to fill the city needs: 1. Road and transportation infrastructures; 2. Housing, offices and commercial venues; 3. Telecommunications and services; 4. Hotel facilities, 5. Sports facilities; and 6. Environmental infrastructures, in a decentralized geographical characteristic. In an attempt to broaden the impacts and legacies, only 38% of such projects were made in the Barcelona city, the others 62% were invested in the metropolitan area and the Catalonia region, (BRUNET, 1995).

Unfortunately, not all mega events projects are able to keep the investment focus on urban development and delivering intangible benefits. One concern that should be at a privileged position on the debate about the mega event financial viability is the maintenance costs of the mega events specific equipment and venues after the event

itself, and the costs to pay for the set of application only necessary during the event, such as the security demands. The international experience shows that such issue is not regularly fixed (OLIVEIRA, 2012). As in other types of mega projects, there is a strategic behavior of cost underestimation in the project's initial phases in order to make easier the project approval. A good example of such pattern can be illustrated in the 2004 Athens Olympics, in which there was a lack of strategic planning for the post mega event use of the constructed facilities (BOUKAS et al., 2013). A significant number of venues used during the Games was built in valuable area close to the crowded urban center and are either unoccupied or seldom used post-Games (ZIMBALIST, 2010).

These two examples can be used to increase the awareness about the benefits propagated by the mega event project organizers and proponents, which do not occur by accident or without an effective action (CLARK, 2008; OECD, 2010). The mega event projects are exposed to the same myriad of issues as any other types of mega projects, which can undermine their benefits. A non-ending list of factors, such as: a) uncertainties and risks concerning value creation, budget allocation, return on investment, reevaluation of priorities regarding new sources of growth, decision-making, funding, operations and planning; b) complexity and dynamism, in the technical/technological and social dimensions; c) difficulty in managing; d) cost overruns; e) delays; f) short use; g) falling revenues; h) overall failure; i) need of social and political support; j) marketing and promotion; k) inadequate deliberation about risk and demands; l) project culture and rationality; m) public-private partnership conflicts of interest; n) power game; o) ambiguity; p) lacking in accountability; and, q) poor cooperation between partners can contribute to a poor performance scheme in terms of public support, economic and environmental outcomes, leading to the Megaproject Paradox effect, and consequently, to riots and public disturbances (ALTSHULER; LUBEROFF, 2003; BOUNFOUR, 2003b; BRUIJN; LEIJTEN, 2008; FLYVBJERG et al., 2003; FRICK, 2008; JENNINGS, 2012; KERZNER, 2009; ORUETA; FAINSTEIN, 2008; VAN MARREWIJK et al., 2008; WALDER; VERMA, 2004; ZIMBALIST, 2010).

Indeed, the public opposition to the sports mega events is a reality in the last years. KÖNECKE; SCHUBERT (2014) conducted a qualitative content analysis study to identify what explanations and opinions are transported via the media regarding the public referendum about the Munich 2022 Olympic Bid. They found that the international sport organizations related to the Olympic Games (IOC) and International Football World Cup (FIFA) are both associated with bad characteristics such as greed for profit, lack of transparency, oppressive host contracts and as undemocratic institutions. The authors also found that the general audience fears negative consequences related to the mega event projects, such as waste of public funds, cost explosions, construction noise and

environmental damages. Similar findings were found by MÜLLER (2012) during the preparations for the 2014 Winter Olympic Games. According to him, the negative impacts dominated the public opinion. Nevertheless, there was a solid support base for the event. The reasons vary according the involved stakeholders. Support tended to be strongest among non-Russians, the younger generation and residents who have good knowledge about the preparations efforts. The perception of positive impacts, in particular expected image improvement, was the strongest predictor of support, while the perception of negative impacts showed a much weaker association with support.

Due to the early stage of development on this subject, we observed a low number of independent studies focusing on issues related to planning and strategic management of impacts and legacies in mega events project, mainly on sports industry (DA COSTA et al., 2008). Ever since, CLARK (2008), VILLANO (2009) and the Organization for Economic Cooperation and Development (OECD, 2010) already provided contributions in this field, and pointed out activities the organizers should do to an effective strategic mega event project planning and management, in order to maximize the positive impacts and legacies. CLARK (2008) had as aim to identify what are the factors of success and failure in organizing mega events of different natures. The OECD commissioned one study to achieve the local development legacy from the 2012 Olympic Games (OECD, 2010). VILLANO (2009) proposed a study keeping the focus on the search for characteristics for a proper legacy managerial process based on the new production factor, the knowledge.

Out of the scope of the independent studies but interesting to note, in 2009 the IOC expressed its concern over the question with the release of a technical guideline about the Olympic Legacy (IOC, 2009a). This guide provides direction to maximize the opportunities to deliver significant improvements and legacies to the host city/country. It incorporates scholars' contributions (IOC, 2003) and agrees with CLARK (2008) point of view, concerning the danger of the lack of a strategic vision for the mega event project and a proper planning and management of its impacts.

In an effort to maximize opportunities and reduce risks, the IOC guide presents nine tenets that should be followed for an adequate impact and legacy delivering and monitoring, as follows: a) The implementation of previous planning and long-term vision; b) The early implementation of the positive impacts and legacies, providing early benefits for the host city/country; c) The involvement and alignment with the host city long-term planning and management strategic vision, particularly infrastructure and urban planning issues; d) The need a expectations management for realistic goals legacy, the Games will not solve all the challenges that the host city/country faces; e) The long-term legacy should be kept under the supervision of existing organizations, such as public entities,

to ensure that legacy will be able to fruition; f) There must be a clear definition of roles and responsibilities concerning the planning, design, implementation, management and operation of the legacy; g) The legacy objectives should be shared and communicated, on a regular basis, to host citizens, so it will be possible mobilize and support public engagement; h) The legacy decisions should be made taking into account the overall host city needs and priorities; and, i) A dynamic and flexible approach should be use to minimize the impact of external events and decisions (IOC, 2009a).

Although unplanned impacts can arise, both the formulation and selection of strategies, and the planning and management of the positive impacts and legacies must be performed to reduce the mega event projects inherent risks, and to ensure an effective investment reward to the host city/country. The lack of a strategic vision for the event and a proper planning and management of impacts could lead to lost opportunities and wasted resources (CLARK, 2008). Therefore, we can realize the requirement for a holistic, clear and well-defined strategy in respect to legacy, as well as already happens in respect to the mega event project organization itself. The strategy can be understood as a way to deliver the goals and outcomes established, improve the performance of an organization or project, and represent an art of how to act (FAYARD, 2010). The traditional strategic planning techniques emerged in the 1960's and were designed to create and implement strategies to increase the competitiveness (CORAL, 2002). There are an extensive literature on the subject that presents different models and rationalities for strategic design and implementation. However, some common thoughts can be raised.

The traditional frameworks of strategic planning have the following objectives: a) to identify threats, opportunities, strengths and weaknesses about the organization; b) obtaining information about the organization itself and about the market, competitors and partners; c) to reduce the risk of bad choices; d) to guide product and service design; e) to analyze the macro environment and outline goals and objectives; f) to prepare the organization for dealing with crisis situations; g) to identify relevant information and to structure them for decision-making; h) to ensure the achievement of a desired future position through resource planning; j) to induce the development and implementation of different strategies (CORAL, 2002). Not coincidentally, these objectives are aligned to the tenets presented by the IOC (IOC, 2009a) and general recommendations from other authors (CLARK, 2008; DA COSTA et al., 2008; OECD, 2010; VILLANO, 2009) to maximize the Olympics positive impacts and legacies. The generic strategic planning begins with a diagnosis of variables which influence the organization both in the internal and external environments, passes by several phases and results in an action plan with

detailed instructions for its implementation, in order to achieve a given desired future situation (CORAL, 2002).

A good example of investment in trying to extend the legacy “wave” generated by the Olympic Games have been provided by the British Government and the Mayor of London with its long term vision (until 2022) for the legacy of the London 2012 Olympic & Paralympic Games (DCMS, 2014). The strategic plan is organized around five main axis: a) Sport and Healthy Living; b) Urban regeneration (regeneration of East London region); c) Economic Growth; d) Bringing Communities Together; e) The Legacy from the Paralympics.

Regarding the axis Sport and healthy life, the goal is to create a tangible sporting legacy of the London 2012 Games, based on the maintenance of Britain as one of the leading nations in organizing mega sports events; promoting an active lifestyle; and participation in high-level sports. In the axis economic growth, the goal is to fully exploit the economic growth opportunities generated by the Games focused on foreign trade, attracting investment and encouraging tourism, based on the monitoring of business opportunities for UK companies in international megaprojects sector and attracting external investment; in supporting small and medium enterprises; in spreading the reputation and British expertise in project management; and stimulating the tourism.

In the axis of communities’ union, the goal is met people in different ways to help improve society and their communities, based on the increase of people interested in volunteering; in stimulating the sense of spirit and national pride; in reducing inequalities related to gender and disability; encouraging sustainability; and education of young people with the Olympic and Paralympic ideal. The goal of the Urban regeneration axis is to ensure economic and social benefits to the entire city of London, based on the transformation of the East London region in a convergence area to live, work, visit and invest; and the transformation of the Olympic Park in an accessible area, provided with creative economy services (higher education, culture and technology). Finally, in the axis Legacy from the Paralympic Games, the goal is to ensure a more inclusive community, helping people with disabilities to realize their potential and have the opportunity to participate in society, based on participation in physical and sports activities; creating inclusive and accessible environments, reducing the difficulty of access to public transport, goods and services; and reducing disability rates of unemployment.

PREUSS (2007) published an extensive review about the strategic approaches used by mega event project organizers and how to measure the mega event project performance. According to him, the majority of mega event project’s organizers support their strategic planning and forecasting in a best practice/benchmarking approach. Such characteristic of try to imitate strategies that have already proven to be successful at the

past seems to appear in other industries, as well (CHRISTENSEN, 2001). This ‘if it is good for anyone, it must be good for everyone’ behavior is even broadly encouraged by project management organizations and some experts.

However, this behavior can lead to decision-making with basis on past competitive advantages. The business practices, models and strategies which generate a given competitive advantage in a successful organization, or context, confer this advantage in reason of a particular range of factors, under a particular set of conditions, in a particular time span (CHRISTENSEN, 2001). Generally, the decision-making process by benchmarking is carried out based only on past information. However, past data tends to produce a decreased organizational competence to generate future value (OECD, 2008), which increases the uncertainty, leading to increased risks. Therefore, during their strategic planning effort, the mega event project managers and decision makers should not only collect past information and defining a future vision. At the same time, they should be aware of the future value creation determinants and be ready to questioning, modeling, measuring and managing such dynamics.

According the evidences and findings presented, it seems that when hosted well, the mega event project can play a significant role in city/region local development, growth and competitiveness. Such role can be achieved when the mega event act as catalyst and/or trigger for specific success factors, that lead to a tourism and business destination attractiveness, business growth, urban regeneration, and improvements in infrastructure, image, environment and local population welfare/quality of life — job creation, goodwill, skills, etc. (OECD, 2010). However, the traditional approaches to mega event projects performance measurement and evaluation seem to be insufficient to support the strategic maximization of the potential benefits and overall project performance.

2.1.4. Mega events Impacts/legacies evaluation

Hosting a mega event project represents a long and expensive commitment from the host city/country. The long commitment period can be divided into four phases: a) the period of planning and implementation of the application (bid); b) the period of planning and preparation to host the mega event; c) The period of the mega event itself; and, d) The post-event period. Regarding the Olympic Games, for example, these four phases are also used in the process of planning the project life cycle (CASHMAN, 2010). They are respectively named the Bidding phase, about two years; the Pre-Games time, about seven years; the Games-time, approximately two weeks; and, post-Games time, until two years after the event.

The expensive commitment happens with a huge need for resources and a heavy financial investment. The last Summer Olympics editions are good examples of heavy costs. The 2012 London costs about US$15 billion; the 2008 Beijing about US$40 billion; the 2004 Athens about US$10 billion; and the "gold standard" 1992 Barcelona had a public investment exceeding US$8 billion (BRUNET, 1995; FORBES, 2012; GIBSON, 2012; ZIMBALIST, 2010). This scenario seems not to change in the next few years, as the cost of the next summer Olympics, the 2016 Rio de Janeiro, have scaled around US$10 to US$15 billion. The amount of investment and the attempt to use the mega event project as trigger for local economic development raises the pressure from the public opinion regarding the efficacy of funds allocation, transparency, accountability, governance and evidences of a proper return on investment.

As well as in the mega projects overall arena, the measurement of mega sport events impacts and legacies is considered a complex action (PREUSS, 2007). There is a lasting debate due to the high event expectations, the power game involved and the fact that impact studies are highly subjective and vulnerable to errors and manipulation (CASHMAN, 2010; CROMPTON, 1995; MATHESON, 2002). In a review of economic research regarding the Olympic Games, KASIMATI (2003) did not found impact studies before the 1984 Los Angeles edition, and between the 1984 and 2012 London edition the Olympic Games proponents commissioned the majority of studies. She considered 30 studies involving various economic variables and categorized the economic impact assessments into *ex ante* e *ex post* analysis. The *ex ante* approaches have been carried out to forecast the impacts whereas the *ex post* is concerning to identify and quantify the economic consequences of hosting the mega event.

According the KASIMATI (2003) study "…a number of ex-ante economic analyses have been conducted, but the research significantly lacks ex-post impact assessments". All the *ex ante* studies analyzed indicated a significant role of the Olympic Games in the economic development of the host cities, however taking into account the positive and negative points of the methods used and the potential bias due to the commissioning of the studies, KASIMATI (2003) showed that the *ex ante* forecasts were not confirmed by the *ex post* analyses.

Nevertheless, for PREUSS (2007) the measurement and evaluation of mega sport event project impacts and legacies is traditionally performed in an *ex post* event basis. Mostly by benchmarking approach, taking into consideration the experiences of past events, or by macroeconomic indicators, often used to find evidences for impacts and legacies (PREUSS, 2007). The possible explanations for the research focus on the benchmark and socioeconomic outcomes from the mega event project can be the lesser difficulty in measuring the socioeconomic indicators, usually published by established

statistical institutes and official research agencies, the tangible nature needed for political justification of investing scarce public resources in a given project, and the visual appeal to meet the expectancy that for each currency unit invested, the mega event project will generate a given economic gain or surplus (HUNTER, 1988; PREUSS, 2007). However, as each event is a unique project, the comparison between different places, at different times, under different circumstances, in a fast changing economic environment, there not seems to be the best option to evaluate and planning positive impacts and legacies for future events. Indeed, inaccuracies and misleading procedures of a given impact analysis can contaminate the following ones (CROMPTON, 1995).

The interest of most mega event project impact studies has generally been set in economics, tourism, urban development, social, and environment issues (CROMPTON, 1995; KASIMATI, 2003; PREUSS, 2007). Interesting to note that, even when the mega event takes place in sports industry, rarely the impacts and legacies in this field are discussed and/or analyzed (PREUSS, 2007). Regarding the economic impact studies, most of them embrace the economic theory based on input-output models, using the multiplier effect of the mega event project investment and spectators spending's as measure, or the computable general equilibrium (CGE) framework (HUNTER, 1988; KASIMATI, 2003). This theory relies on the fact that the such expenditures cause a change in the level of a given economic activity, which in turn brings changes in the level of economic activities in other sectors, creating a waterfall and multiplier effect arising from the first one. "An economic impact analysis is designed to study the economic effect of additional expenditure attributable to a sports event and should be compared with equivalent investments designed to create economic stimulus in other sectors of the economy" (CROMPTON, 1995).

In summary, the interaction process of three elements could contribute to the total economic impact from a given initial injection of expenditures. The direct impact, comprising the first round effect of the initial spending. The indirect impact covering the successive rounds (wave effect) of recirculating the initial spending. And the induced impact, the additional wave effects caused by employees of impacted sectors spending their income (CROMPTON, 1995). However, frequently "… the common belief that the results of this process can be accurately measured and manipulated by government is mistaken – and genuinely dangerous" (HUNTER, 1988). If we incorporate costs into the analysis, we change it from an economic impact analysis to a cost benefit analysis (CBA). The CBAs are designed to try identify the best investment alternative, considering the benefits that can be obtained from the mega event project investment, its costs, and comparing the net long term benefits with other project options if the same resources

were employed in. According CROMPTON (1995), the mega event project decision makers should use this information to evaluate alternative investment projects.

Regarding the methodological issues, CROMPTON (1995) reported eleven sources of misapplication and inaccuracy in the base of the traditional economic impact analysis in sport events: a) the use of sales instead of household income for multiplier effect calculation; b) the misrepresentation of the employment multipliers; c) the use of incremental instead of normal (or true) multiplier coefficients; d) the failure to define accurately the area of interest involved on the study; e) the inclusion of local spectators; f) the failure to exclude visitors that may have been planning a visit to the host city/country for a long time but changed the timing of their visit to coincide with the mega event and the casual attendance; g) the use of proxy or reused (take the results of an economic impact assessment from similar studies in other communities) multiplier coefficients; h) the claim for total instead of marginal economic benefits; i) the confusion between expenditure turnover and multiplier; j) the omission of the opportunity costs; and k) the measurement only of benefits while omitting the negative or cost impacts. NOOIJ et al. (2013) contribute with the discussion raising requirements concerning the CBA design, expenditures compensation, inclusion of variables (such as the tourism effects of crowding-out and bidding costs), a clear distinction between costs and investments, the non-inclusion of the probability of no success, and the choice of the discount rate and the net multipliers used in the input/output approach. Such factors were extensively discussed by MATHESON (2002); NOOIJ et al. (2013) and DE NOOIJ (2014).

In most cases, consulting firms hired by local governments and/or project organizers conducted the official economic impact and cost-benefits studies in an attempt to justify it to host city/country taxpayers (CROMPTON, 1995; HUNTER, 1988). However, according some independent authors (CROMPTON, 1995; DE NOOIJ, 2014; MATHESON, 2002; NOOIJ et al., 2013; ZIMBALIST, 2010), the financial gains are unlikely and the economic attractiveness seriously overestimated previously, even worst when it take into account the probability of no success in going ahead of the bidding phase. DE NOOIJ (2014) highlighted a series of studies, based on Olympics and other mega sport events showing a substantial cost underestimation and benefit overestimation, which agrees with the findings of FLYVBJERG (2008), FLYVBJERG et al. (2003) and WALDER; VERMA (2004) concerning other types of mega projects.

In a review study, ZIMBALIST (2010) failed to collect enough scientific evidence to support the delivery of the potential direct economic impacts, declared by the organizers, in hosting the Olympic Games or the FIFA World Cup. In an *ex ante* analysis attempt, NOOIJ et al. (2013) proposed to develop "…an accurate social cost–benefit analysis (CBA) of major sports events…" to drawing conclusions for future events. The authors

argued that the social CBA is a powerful tool to assess the impacts on the host city/country welfare. But, to meet such role the model has to gather some requirements to avoid an overestimation of the welfare effects (presented in the paragraph about the CBA methodological issues above). In their study, taking the case of the Netherland and Belgium conjoint bid to host both the 2018 and 2022 FIFA World Cup, they focused on the welfare effects and, according their model, the costs exceed the financial benefits. The only benefits reported by the authors were the non-financial ones, such as the greater sense of happiness, harmony and national pride and identity.

Other authors, tried to find different approaches to measure and evaluate the impacts and legacies, such as ATKINSON; MOURATO (2005) with a contingent valuation analysis of willingness to pay, BARGET; GOUGUET (2007) with its social utility valuation, and the IOC, with the development of an initiative called Olympic Games Impact Global Study (OGI). The OGI goal is try to improve the assessment of the overall impacts of the Olympic Games in the host city/country, its environment and its citizens. To do this, it embeds the concept of sustainable development and proposes 125 indicators clustered into three categories of impacts: a) 38 economic, b) 46 social, and c) 41 environmental (FURRER, 2002; IOC, 2009b; PWC, 2005). As response to the model operational complexity, the indicators was re-clustered in 30 thematic topics, nine economic, 12 socio-cultural and nine environmental, on its last version (IOC, 2012).

As we can see, there still are some obstacles in measuring impacts and legacies in sport mega event projects. PREUSS (2007) summarized them in three main groups. The first is related to the difficulty in measuring the ‘net’ legacy rather than ‘gross’ one. It is hard to isolate an event legacy from a non-event legacy on the measurement of the city development. Without hosting the mega event, the host city/country could invest the available resources in other projects, which also could produce other positive impacts. Those opportunity costs have to be considered. An additional concern to deal with is the presence of other factors that could trigger a positive impact and contribute to create an ‘alternative’ development to the event, as mentioned in previous section about the 1992 Barcelona Olympics. Until now, there is no way to distinguish which impacts and legacies would result solely from the mega event itself, from these other factors and/or alternative projects, and even from progress/breakthrough or crisis economic cycles.

The second obstacle is the measurement of the legacy over time. According some authors, the project life cycle phases should be used in impact’s planning and evaluation efforts, since the delivery of the impacts and legacies range as function of time span (CASHMAN, 2010; IOC, 2003;2009a;2012). CROMPTON (1995) reported evidences that the wave effect of the indirect impact may take 15 to 20 years to complete before all the initial expenditures leak out of an economy. Moreover, the “Mega sport event

legacies indirectly stimulate the economy and other activities in the host city. In the long-term the legacy effect cannot be isolated from the general development of the city" (PREUSS, 2007). Finally, the third obstacle relates to the difficulty in judging whether a particular legacy has positive or negative value. In some cases, a given legacy may be positive and negative at the same time, depending on the stakeholder involved and the dimension to which it is evaluated.

We particularly agree with PREUSS (2007) regarding these obstacles "... does not affect the measurement of a legacy itself, but is concerned with a judgment of its value". The perception about the mega project outcomes and impacts has many variations. As mega projects are multifaceted and usually have a huge number of stakeholders, the different intrinsic interests involved can lead to complaints and controversies depend on potential displacements, perceived negative impacts in business, residence and/or environmental issues (FRICK, 2008).

In our point of view, a possible source for the FLYVBJERG et al. (2003) Megaproject Paradox and the large numbers of disappointing results, could be a detachment between the significance of the outcomes of the mega projects (real delivered impacts) and the value created (benefits expected) for the large number of stakeholders and general audience, vis-à-vis the huge financial tax payers investment. Such vision is, in part, shared by ARMENAKYAN et al. (2016). In a study to explore the impact of expectations and their confirmation on attitudes and evaluations of the Olympics Games, they found that the attitudes towards the games as a destination and as an event differ among people with different levels of individual association. To deal with such issue, PREUSS (2007) recommends that the impacts and legacies evaluation should be performed based on its value "… for a defined period of time under a given welfare function", as well as based on a quantitative and qualitative analysis considering all tangible and intangible costs and benefits.

Some studies indicate that the non-financial and intangible impacts are potentially the major economic benefits of mega events, by its nature, variety and indirect influence on economic factors in host countries/cities (NOOIJ et al., 2013; PREUSS, 2007;2010). Following this rationale, PREUSS (2007) proposed a potential alternative bottom-up approach to the identification of the mega events projects impacts and legacies (figure 3). His approach is based on the long-term development plan for the host city/region and takes into account the tangible (hard) and intangible (soft) structural changes delivered by a mega event project. The author named these structural changes as 'event-structures'. "When 'event-structures' change the location factors (supply side) in a city, any activity based on these changes can be considered the event legacy" (PREUSS, 2007).

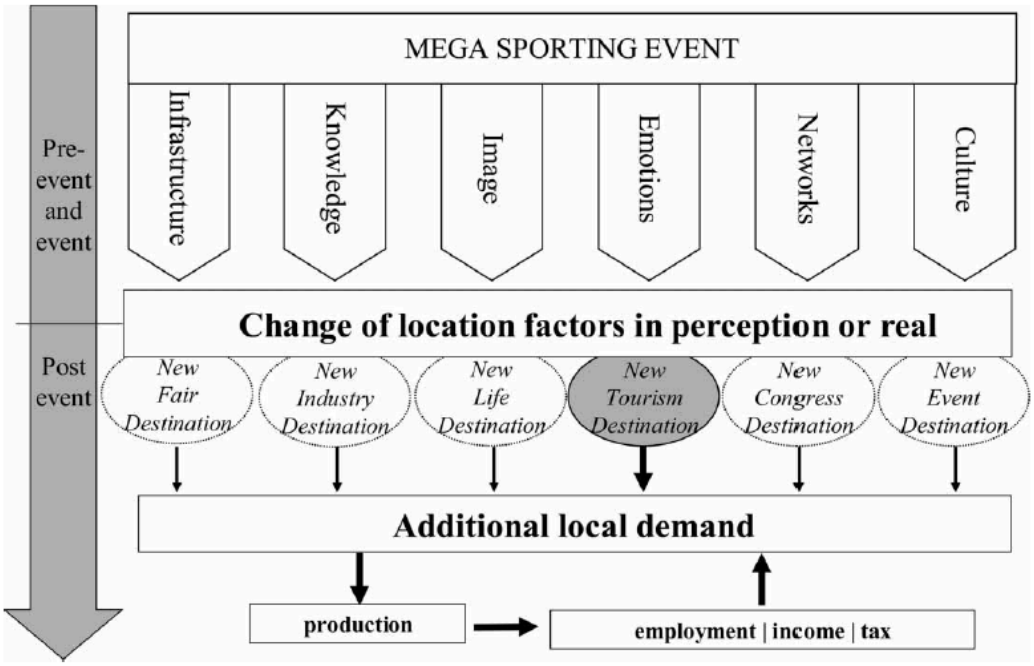


Figure 3 - Economic relevance of the impact on the event-structure factors (PREUSS, 2007)

The PREUSS (2007) framework encompasses six event-structures (figure 3), one tangible and five intangible. As the tangible (hard) event-structure he cited the general infrastructure build for the mega event, such as the sports infrastructure and training sites (primary); the villages for athletes, technical delegates and media that are generally refurbished as residential sites after the event (secondary); and the security infrastructure, power plants, TIC networks and cultural attractions (tertiary). As the intangible (soft) event-structures he cited the knowledge produced (organizational, security, technological, etc.), networks (political, security, sports bodies, etc.), culture (cultural identity, ideas, common memory, etc.), image (symbolic significance that can form, re-position or solidify the image of a host region/country) and emotions (pride, prestige, inspiration, vitality, recognition, etc. through hosting the mega event). “Four of these — infrastructure, know how, networks and culture — are developed almost as a matter of course through the preparation of the event, whilst a further two — emotions and image — are dependent on the momentum the event develops” (PREUSS, 2007).

More recently, PREUSS (2015) updated his model, changing the perspective to the value and size of the event-structures and its changes. In this revision, he take into account not only the event-structures delivered by the mega event project, but also four aspects: “… what should be considered as legacy; who (i.e. which stakeholders) are affected by the changes; how the legacy will finally affect the quality of life in a host city or country; and when a legacy starts to create ‘value’ (which depends on when it is used

and no longer latent)" (PREUSS, 2015). Thus, this new framework takes into account different perspectives and dimensions of legacy.

However, the Preuss approach remains only conceptual and the existence of valid operational methods ready to use on the assessment and evaluation of mega events projects intangible impacts and legacies is still unclear. Such fact brings us back to the opportunity raised in the section 2.1.2, regarding the need of solutions for performance improvement by the development and testing of innovative approaches to deal with the mega projects context. At the present study, we intend to verify an intellectual capital (intangibles) approach as a possible way to improve the accountability, decision-making and management of mega projects value creation (positive impacts and legacies).

The fundamentals about the value creation are debated in the section 2.2.1. The role of the intangibles as strategic factors for value creation and as central factors to economies' growth and development is discussed in the section 2.2.2. The fundamentals of the intangibles and a review of current models and approaches to deal with them will be presented in the section 2.3. And the assumptions and propositions of the new approach model to measure and evaluate the mega event projects impacts, taking into account the intangible assets will be presented in the chapter 6.

2.2. Value creation, growth and local development

2.2.1. Definitions, characteristics, elements and constituents

The definition of the value and wealth in economic terms is also subject of an 'endless controversy'. According HENRY GEORGE (2004), the meaning of value has relation with worth, involving and expressing the idea of esteem and regard, and can be used in two senses. The former concerning the usefulness and utility of something to directly meet a given human need, which Adam Smith distinguished as 'value-in-use'. And the latter in respect to its trade or purchasing power to indirectly meet a given human need through its exchangeability for other thing, which Adam Smith distinguished as 'value-in-exchange'. In other words, one can, respectively, value (esteem) something in respect to its own qualities and for the uses to which it can be destined, or for what it can bring in exchange.

Following such rationality, the value has a direct relation with humankind needs and wishes, and according GEORGE (2004), for one side, "The quality of value in use is an intrinsic or inherent quality attaching to the thing itself, and giving it fitness to satisfy man's needs." On the other hand, the quality of value-in-exchange is not intrinsic or inherent to the thing itself, so what the value determines is not only how much a thing is

needed or wished, but how much anyone is willing to give (or trade) for it, i.e. its market value. It is this second sense that value means in economic terms (GEORGE, 2004).

The market value or value-in-exchange, due to its not intrinsic nature presents a subjective characteristic, and depends on the actors of the trade (economic agents) and its degree of scarcity/rarity or abundance/usualness. Regarding the actors of the trade, "The value of a thing in any given time and place is the largest amount of exertion that anyone will render in exchange for it. But as men always seek to gratify their desires with the least exertion this is the lowest amount for which a similar thing can otherwise be obtained" (GEORGE, 2004). In respect to the degree of scarcity or abundance, the "true and absolute" value of anything is dictated by the difficulty or ease of acquiring it. A cheap or low value thing means that it can be obtained with little human effort or exertion. On the other hand, a dear or high value thing means that it can be obtained only with much effort or exertion.

The meaning of wealth, for its turn, has relation with the accumulation of value that aggregates to the common stock of the society. This kind of value, named by GEORGE (2004) as 'value from production', only comes from the exertion of the human labor. Hence, in a traditional view, wealth consists of the accumulation of material things, taken as it were by labor from the natural resources. Such things that have a value and can be trade in the market are known as assets. GEORGE (2004) also raises the importance of distinguish the ordinary use of wealth from its economic sense. Commonly, it is used regarding the accumulation of personal assets, when applied to individual possessions of things that have a monetary or exchange value. But in economic sense, wealth is concerned to certain tangible assets, which have a value coming from production, such as manufactured goods, buildings, machinery, tools, agricultural and mineral products, etc. "The increase of such things is an increase of wealth; their decrease is a lessening of wealth; and the community that, in proportion to its numbers, has the most of such things is the wealthiest community" (GEORGE, 2004).

The wealth produced can be consumed to achieve its final use, i.e., meet a given human need, or used by associating in the production of other wealth, in the form of capital. Then, capital is the part of wealth "… devoted to the production of other wealth…" (GEORGE, 2004). As capital, the wealth can be concretely exchanged or stored. It can be exchanged for some other form of wealth or stored as a saving, for a future use or exchange. Therefore, in summary, to produce wealth one has to apply or combine the primary factors of production: natural resources (land), labor, and (produced) capital.

The development of this classical concept of wealth depends that nations, organizations and individuals place on the market a series of goods and services that other actors take ownership and consume. Following this concept, as stated above by

GEORGE (2004), a wealthy society is the one that the production is elevated and mainly exchanged in the market (MÉDA, 1999). Hence, across the years, nations have implemented several means to induce the production and trade with the objective of wealth accumulation to nurture the economic growth and local development. Usually, these means take place through some policies of economic support or subsidies to certain industries or sectors, trying to foster a conventional thinking of nation competitiveness based on the labor cost, interest rates, exchange rates and economy of scale (PORTER, 1990).

More recently, the concept of competitiveness regarding nations, regions and cities evolved to a broad definition comprising factors, such as infrastructure and accessibility, industry and economy scale and structure, human capital and labor force. These factors activate the performance and competitiveness by major drives, such as entrepreneurship, innovation, investment and competition, "… creating competitive dynamics or efficient interrelationships among the major competitiveness indicators and others aspects of local business environments…" (OECD, 2006b). These competitive indicators can be classified in four major categories: economic performance, government efficiency, business efficiency and infrastructure.

Thus, over the last years, other means have been taken in place to develop the city/region competitiveness. But, the focus now is on a modern rationale of economic growth and competitiveness, through an advantageous insertion in the new globalized economy. Nowadays, cities and regions compete with each others, trying to provide an optimal combination of locations factors, such as business support, affordable housing, quality education, etc., to attract skilled labor and investment (OECD, 2006b). Among these means, the exploitation of the local natural vocations and competitive advantages by a new generation of mega projects is usual, as seen in last section. With the mega projects, the nations tend to address the needs of a modern urban development with office-based business and tourism and/or leisure services (OLIVEIRA, 2012; ORUETA; FAINSTEIN, 2008).

Traditionally, to measure a nation wealth accumulation, and consequently its economic growth and local development, is necessary to measure the flux of economic activity - production and trade (WORLD_BANK, 1997), generally by the Gross Domestic Product (GDP) or measure the productivity by the GDP per capita. But, since the production and growth become autonomous and priority goals and, at the same time, they serve as evaluation tool and expression of the development and power, everything tend to be included into the economic circuit and tends to be subjugated to a financial valuation. As GEORGE (2004) argued in the 1800's, "A thing has no value if nothing can

be got in exchange for it, and it has value when, so long as, and to the degree that, it may be exchanged for some other thing…".

Since then and continually during the history, the characteristics of the things that may or may not be object of a commercial exchange seem to have changed to the understanding that the commercial evaluation of any asset or good will be just an objective matter of a predictable evolution of the judging criteria. This financial valuation process began with the idea that certain activities that previously seemed not quantifiable, could, however, be bought and sold as consumer goods, such as work, services, land, knowledge, artwork, etc. (HÉNAFF, 2002).

Nowadays, nothing escapes the market evaluation, "All activities are translated in terms of cost: everything has a price, including public celebrations (political, artistic, sporting and religious)" (HÉNAFF, 2002), scientific research, the salaries of teachers or researchers, cultural activities, artistic creation, and the remuneration of writers, for example. However, this translation does not guarantee that such evaluation is objective, on the contrary, the subjective characteristic of value (presented above) goes against the common perception of objectiveness produced by the habitual monetary scale of measurement of cost/price.

The question of market value is so present and widespread that we usually think of value in terms of money, which actually serves as a flux for the exchange of values (GEORGE, 2004), or according HÉNAFF (2002) as the "universal mediator". But, since it has the function of represent the commercial value of the goods, it seems that the money take away the power of translation of all other values, and just determine the price of the goods. However, there are different orders of reality and value. From one side, the goods that allow the satisfaction of basic physical needs, the things known as 'necessary', the material resources, the manufactured goods, the capital, which have a price and make part of the meaning of wealth. On the other side, there is the satisfaction, the sources of happiness, the well-being, the signs of power for the individuals as well as for nations, which belonging to another order of things or actions which have no price, but a value. This second group is not taken into account in the traditional definition of wealth (MÉDA, 1999).

In questioning the process of financial valuation of everything, HÉNAFF (2002) presents the work of Michael Walzer about the 'spheres of justice'[3]. Walzer argues that any society can be regarded as a 'distributive community', i.e., any society distributes a variety of social goods, such as those related to politics, economy, education, health, safety, religion, leisure, family, etc. Each set of goods shapes a sphere of justice. The

[3] WALZER, Michael. Spheres of Justice: A defense of pluralism and equity. New York, Basic Books, 1983.

good relationship between these spheres initially depends on how each one respects the autonomy of the other. Otherwise, crises and conflicts would appear.

Beyond these spheres, there is one that tends to be adjacent to all the others: the commercial sphere. And according HÉNAFF (2002), the prevalence and influence of the commercial sphere on the others, and the possibility - and temptation - to provide a commercial equivalent for every kind of goods and assets, arise for three main reasons: a) the market has become coextensive with the society as a whole, with all its activities, projects and status; b) the monetary tool has an incomparable plasticity; and c) the power uses the means which the money guarantees. About the two last reasons, GEORGE (2004) argues that "Money itself derives its power of serving as a medium or flux of exchanges from the fact that it is of all things that which is most readily exchangeable…" Despite of the vigorous defense of the financial evaluation as an impartial and objective process, these three factors also contribute to raise a considerable degree of subjectivity to it.

The symbiosis among the market and society is explained by HÉNAFF (2002) from the rise of the economic sphere, in general, due to the development of capitalism. The economic sphere became dominant because it has a specific importance. Belongs to it the condition of existence of every society. This condition is seen in the means of livelihood, i.e., the material means which make possible the group living and develop for decades. However, the consequences of the exponential growth of the production and exchange activities have already emerged. Such growth tends to raise new issues (population growth, new knowledge, new means of production, urbanization) and the perception of new goals (sustainable development, new representations or conditions of power), which will be better discussed in the next section.

The power of the money, on the other hand, became social and cultural. According Welzer (HÉNAFF, 2002), the money buys its own participation in the industrial society, since the legitimacy is only recognized to the individuals who can have constant access to a number of material goods. Individuals without access to such material goods (housing, communication, transport, leisure, etc.) are excluded from the functional and symbolic level. HÉNAFF (2002) concludes that the social legitimacy and the acceptance by the group, which are intangible assets, are accessible, in our society, by the accumulation of material goods, highly money-depend.

Concerning its role as a monetary tool, money is only an intermediary, a substitute. It was created to translate the commercial value of the things. Their 'natural' function is acting as a proportion operator, as a kind of 'judge' between different things. As aforementioned, the things have two utilizations: use (consumption) or exchange. However, money had only one: the exchange. Its function was exclusive; act as a

measurement scale to the subsistence transactions, because of the diversity and complementarities of professions and occupations (HÉNAFF, 2002).

The exchange of goods becomes a ‘problem’ when objects are changed not because of the agents’ mutual needs, but only with the goal of accumulating profits. The money utilization (buying and selling goods) for the purpose of accumulation makes possible a ‘deviation’. It makes the money has itself a consumption's use. Such loss of function disrupts the rationality of its own definition: the proportional equalization between different goods. Once the money takes the consumption function, and will no longer operate the relation between different goods, the terms of trade are deprived of their measurement scale (HÉNAFF, 2002).

Over the years, “Money changed of dimension, both at the level of accumulation, as flow; as investment and, as profit; we are dealing with colossal phenomena...” (HÉNAFF, 2002). Consequently, money is now firmly established as the most powerful instrument of measurement and exchange of goods, as an essential regulator of financial flows and as a mean par excellence of industrial investment and work/labor remuneration. Is the unlimited power of translation that makes money so attractive, the potential to be converted in any manner of things, according to wishes, needs, emergencies or opportunities. “The money opens the feeling of the possible, it makes accessible an unlimited amount of choices because of its indeterminacy. It is mobile, universal and has total plasticity (...). But, this unlimited capacity of conversion also gives it a sort of dangerous magic...” (HÉNAFF, 2002).

Besides it being an effective instrument of conversion, the money also is an instrument of dissimulation. Its power as substitute becomes a great tool to deceive. It has the power to deceive concerning the value of the things, making precious (valuable) something only by giving it a high price. It has the power to deceive concerning the relationship among individuals, giving importance, respect and/or esteem for those who do not deserve it, giving someone a certain position. Or deceive in relation to time, during the purchase of goods in a brief instant, which would require, in another situation, a great effort or exertion. Thus, it is necessary to make the distinction between its role as “legitimate and effective” tool (HÉNAFF, 2002), i.e. as currency, and its use as a powerful tool for acquisition, control, exploitation and/or corruption.

Rely on the characteristic of unlimited intention to convert ‘not marketable’ in market goods, where the risk of corruption resides. As “not marketable” goods, Walzer and HÉNAFF (2002) mentions: the individual freedom, the political power, the criminal justice, the freedom of speech, of press, of religion, of association, of partners’ choice, the nationality, the public honors, and other similar goods. These goods characterize the

existence of a non-quantifiable or intangible dimension, which HÉNAFF (2002) named 'hors-de-prix' (out of price).

In modern societies, the rational economic sphere has the tendency to embrace all forms of activity and exchange of goods. The means of reciprocity of goods and services that do not meet the market criteria are considered, by assumption, "archaic" or "irrational". The utilitarian exchange dominates to such an extent that, according HÉNAFF (2002), it is easy to believe in the existence of a market for everything that could not be measured financially, such as artworks, rare objects, the "table pleasures", concerts, leisure and all other forms of festive celebration. To illustrate such paradox, HÉNAFF (2002) laid hold of the spectacle/entertainment industry. For the author, the entertainment industry makes use of large amounts of capital in order to produce a distraction and not production. "An extraordinary economic management apparatus (investments, facilities, gains and losses estimates, wages) is placed at the service of which is itself unproductive" (HÉNAFF, 2002). Thus, the hors-de-prix market, or non-useful market, could be "... the best kept secret of what is trivially useful and whose value seems evident to everyone" (HÉNAFF, 2002).

Specifically concerning the mega projects, the main motivation described by the nations interested in hosting them, relies on the aspects related to the growth and development acceleration on a given region. The local socioeconomic development is, traditionally, pursuit by targeting on the catalyst effect of the massive project investments in urban and infrastructure modernization and/or regeneration to increase the capital flow, boost tourism and business destination attractiveness, foster business growth, reduce transportation cost, raise the welfare/quality of life (job creation, goodwill, skills, etc.), and improve the perceived image of the host city/country (CLARK, 2008; KASIMATI, 2003; OECD, 2010; OLIVEIRA, 2012; ORUETA; FAINSTEIN, 2008; PREUSS, 2007; ZIMBALIST, 2010). Notwithstanding, it remains unclear how and in which magnitude the changes on public funds destination, from their original allocation on programs that can most significantly benefit the majority of the citizens (housing, health and education, for example), to certain industries or sectors or to mega projects can contribute to the economic development.

Following the aforementioned concepts of value, we can realize the mega event project don't have a value-in-use, an intrinsic quality upon itself. It has a subjective extrinsic value, depending on the different stakeholders expectations. In other words, It has a value-in-exchange to achieve a given pay-off. As the quality of value-in-exchange is not intrinsic to the thing itself, what the value determines is not only how much a thing is needed or wished, but also how much anyone is willing to give (or trade) for it. Therefore, the emerging question is whether we should be satisfied with the old and

obsolete conception of wealth presented above, or whether we should rethink the indicators which put in evidence a number of products that we can understand, but ignore other important life aspects (MÉDA, 1999). The traditional indicators are associated with "... no awareness of the essential human and social activities...". Such essential activities are not considered because they don't have "... access to the status of market products" (MÉDA, 1999).

Evidences from the WORLD_BANK (1997) indicates that the stocks of produced capital and natural resources are important components of the wealth of nations. However, the human resources (including not only the raw labor, but also the human and social capitals) and the way that individuals and societies works and are organized are the most important determinant. Following the same rationality, it seems to us that, concerning the mega events projects, it is also possible to exploit their value-in-exchange to achieve a given local development based on the intangibles (or the hors-de-prix) factors, i.e., the set of goods or assets, which don't have price, but value. Among others, the recognition, influence and power in the political dimension; the image, reputation, recognition, social bonds, reciprocity, social cohesion and social empowerment in the social dimension; the capacities, capabilities, skills, well-being, happiness, talent development in the human dimension; and the (public) security, education, values, culture in the structural dimension. Such factors are not included on the traditional definitions of wealth and can't be trade (sold and/or bought), but seem to have a true value for the general public.

2.2.2. The paradigm changes on value and local development

Despite of the supremacy of commercial evaluation, there is no way to avoid the issue of the evaluation process and the intangible (or the hors-de-prix or unquantifiable) dimension. The intangibles remains omnipresent and cannot be considered the past of the business relationship (HÉNAFF, 2002). The intangible dimension represents other rationality and responds to the other individuals' requirements. As already mentioned, it belongs to another order of things or actions which have no price, but value (MÉDA, 1999). Measure and evaluate the intangibles are tasks somewhat difficult. We can nominate it, the goods and assets that cannot be submitted to the business relationship without destroying them, without endangering its own symbology, the relationship and recognition between the agents, the honor and dignity. "... no commercial equation will can express the price of life, friendship, love or suffering; (...) common memory goods, (...) truth", and knowledge (HÉNAFF, 2002). There are things exchanged on special social occasions such as parties, meetings, weddings, etc., that have no economic

meaning or role. Such exchange of goods only has as objective the ties of recognition between individuals or groups, the homage, the connection between the agents. These things are consumed at the moment of the celebration or distributed as gifts (donations, medals, etc.). “They are strictly outside the utility and profitability circle (HÉNAFF, 2002).

Nowadays we have living a value concept crisis (GORZ, 2003). The rapidly increase in ageing population, due to the great population growth in last decades; the natural resource constraints; the proliferations of new means of production, due to the technological innovations; and a succession of global crisis have been leading to weak labor markets and macroeconomic conditions (OECD, 2013b). As we already mentioned, the consequences of the exponential growth of the production and exchange activities to accumulate wealth raised these new issues. The globalization and the acceleration of the international trade flows have also put the metropolitan regions in a central role for the global economy and, consequently, as a preoccupant axis of population attractiveness leading to a fast (and sometimes uncontrolled) urbanization (OECD, 2006b).

The urbanization is a worldwide phenomenon. According the United Nations (OECD, 2006b), in 2007 the number of urban residents passed the rural for the first time in history and the world’s urban population is expected to rise to 5 billion by 2030. This pattern raises important issues about the long-term sustainability of increasing concentration in urban regions, where congestion due to high population density is already considerable. The acceleration of urbanization along with increasing trade flows among cities has led to the emergence of metro-regions. According the OECD (2006b) metro-regions can be categorized in three sizes: a) the small metro-regions with around 1,5 to 3 million people, b) the medium to large metro-regions with 3 to 7 million people, and c) the mega-cities of over 7 million people.

The process of creation of such metro-regions “…is the result of several processes among which are urbanization, suburbanization, migration, centripetal forces and linkages amid polycentric regions” (OECD, 2006b). Although most metro-regions seem to be associated with high wealth and employment concentrations, and leading sectors, they also tend to concentrate a high number of unemployed. While the employment growth is typically higher in cities, the urban locations also contain unequal numbers of people who are unemployed, inactive or who work in the informal economy. Certain characteristics of dynamic post-industrial cities produce increasing socio-economic inequalities. The precise patterns vary from city to city, partly depending upon national economic trajectory, labor market and welfare state policies, and citizenship rights. But, most large cities have large number of people with low standards of living and social

problems. The main consequences of urban poverty are a higher level of criminality (OECD, 2006b).

Such pattern of economic advantages and difficulties posed by the rise of metro-regions and mega-cities, present a number of strategic choices that confront policy-makers. According the OECD (2006b), the key dilemmas for the metropolitan regions are competitiveness, livability, strategic visions, and the governance of metro-regions. “Cities are key components in a territorial development strategy” (OECD, 2006b). A comprehensive national economic strategy cannot ignore the spatial structure and the characteristics of cities that affect economic performance, social cohesion and environmental conditions. National governments may prepare themselves to develop policies and guide investments in an appropriate fashion to meets its needs and potential. “But national urban policies in the past have been reactive and remedial, not pro-active and dynamic. Governments at all levels must re-examine their roles and responsibilities and explore ways to foster synergies in a collaborative framework” (OECD, 2006b).

In such sense, productivity emerges as a key factor in metro-regional performance once it explains a great deal of the level of competitiveness of a country, a region or a metropolitan area. Thus, countries should place particular importance on understanding agglomeration economies that entail higher levels of productivity in their urban areas in order to foster their competitiveness. A greater performance in the productivity is strongly linked to their association with certain kinds of economic activity, in particular high-tech and advanced services. Based on OECD (2006b) evidences, we can see that well-performing metro-regions have developed value-added clusters in telecommunications, ITC, biopharmaceuticals, financial and other business services, transport and logistics, and analytical instruments. Generally, a robust concentration of productivity and a high skill level people have been established, supported by a network of universities and advanced research centers around such industrial activities. Efficient R&D seems to need the diverse industrial base and labor force offered by large metro-regions.

In general, the added value and productivity of service activities are less dependent on physical space and less constrained regarding a location, as they are primarily driven by the availability of educated and skilled human capital. The human capital is both attracted towards and create population concentrations on the metro-region in a reinforcing spiral. Among those that choose to migrate to large cities are highly skilled young people attracted by urban amenities and higher wages. “At the same time, the strong pressure they exercise on land costs deters space-consuming industrial activities from locating within the metro-region…” (OECD, 2006b), thus these forces shape the

metro-region and strongly influence their productivity level leading metropolitan regions to be a dynamic engine of national economic growth.

As we can see, the capitalism based on fixed, or physical, capital is being gradually replaced by a ‘post-modern’ capital centered in the intangible capital, also known as 'Human capital', 'Knowledge capital', ‘Knowledge-based capital', 'Intelligence capital' or ‘Intellectual capital'. This transition reflects a paradigmatic change from the industrial economy based in the three primary factors of production, natural resources (land), labor, and (produced) capital to the knowledge economy, based in the knowledge assets and intellectual capital (MALHOTRA, 2003). "The creation of value (and thus of wealth) does not just happen any more through physical production..." (BOUNFOUR, 2003b). An inconceivable thought in the 1800`s, when GEORGE (2004) argued that the immaterial wealth was a contradiction, “Personal qualities such as knowledge, skill or industry are qualities of labor and can never be properly treated as capital.”

Nowadays, however, different modes of production coexist and the traditional work, measured in units of output per unit of time, is being gradually replaced by the immaterial work, in which the traditional measure patterns do not apply anymore (MÉDA, 1999). We can use as metaphor, the artist or writer work. His/her effort is their business and such work is not measurable: “... the work is judged not by the labor time invested. It is said that this is a service (a notion that entails the idea of dedication and obligation), a gift. Such gift evokes an acknowledgment...” (HÉNAFF, 2002), which can translate into material rewards. But, “These rewards do not aim to put the artwork in a regime of equivalence” (HÉNAFF, 2002). In this new reality, the knowledge emerges as a new factor of production.

Moreover, the knowledge has been considered the primary productive force, has become strategic factor for value creation by organizations, and, consequently, is considered central factor to economies’ growth and competitiveness (BOUNFOUR, 2003b; EDVINSSON; MALONE, 1999; GORZ, 2003; OECD, 2008;2013b). In 1968, Peter Drucker had already announced that “knowledge has become the central capital, cost center and basic resource of the economy” (CAVALCANTI; GOMES, 2000), introducing the initial steps for the Knowledge Economy. But only during the 1990`s, managers and decision makers realized on a large scale, the need of the knowledge management to deliver better results (DRUCKER, 1993). The beginning of the Knowledge Era becomes more notable in early 2000’s when we could see an increasing investment in the intangible capital by private business (OECD, 2013b), and when the United Nations (UN) launched the UN Millennium Declaration, envisioning that the development of national knowledge societies should encompass social, cultural, and human development besides economic growth (MALHOTRA, 2003).

In the United Kingdom, the estimative of the business investment in intangible assets have more than doubled as a share of market sector gross value added (GVA) between 1970 and 2004. In Australia, between 1974-75 and 2009, the intangible investment average annual growth was around 1,3 times in comparison with the physical assets. In the United States, the business investment in intangible capital rose almost continuously for the least 40 years, from 8% to almost 16% of adjusted GDP between 1972 and 2011. Nevertheless data constraints, in China the investment in intangible capital estimates increased from 3,8% in 1990 to 7,5% of GDP for the total economy in 2006. In Brazil, the business investment in intangibles had also increased, from 3% to 5% of GDP between 2000 and 2008. And in most OECD countries the knowledge-based capital account for 5% to 11% of the GDP. Indeed, taking into consideration a number of other countries with available data, the business sector has been investing as much, or more, in intangible as in traditional tangible capital (OECD, 2013a;2013b).

The possible reasons for the growing interest in intangible capital can be, among others factors: a) the existence of a positive and strong association between competitive advantage and intangible investments, levered by R&D, design, branding, quality of products, intelligence, knowledge, ICTs, use of data analytics and management practices, initial education and vocational training (BOUNFOUR, 2003b; OECD, 2013b); b) some accounting studies have shown a positive relationship between business investment in intangible assets and macroeconomic growth, greater business and labor productivity, and income per capita (OECD, 2013b); c) The customers' and business perceived value of products and services demands increased complexity and requires the incorporation of a higher percentage of innovation, technology and intelligence (CAVALCANTI; GOMES, 2000); d) the fragmentation and geographic dispersion of value chains, as well as the increased sophistication of production processes (OECD, 2013b); e) the strong emergence of the new information and communication technologies (ICTs) (BOUNFOUR; MIYAGAWA, 2015) ; f) the identified spillover effects from the intangible assets, i.e. the absorption of knowledge by people other than the originators, that occurs because knowledge is inexhaustible and cumulative good that is difficult to control, such as in design, brand equity, organizational capital and training to other parts of the economy (BASKERVILLE; DULIPOVICI, 2006; OECD, 2013b); g) the increased returns to scale in production due to the reduced, or even zero, marginal cost of some intangibles, which can also be reinforced by positive network externalities BOUNFOUR (2003b); and h) the added value and productivity of service activities that are primarily driven by the availability of educated and skilled human capital (OECD, 2006b).

According BOUNFOUR (2003b), the interest about the intangibles must be considered from two perspectives, the entrepreneurial and macroeconomic, both

focusing a new model of competitiveness. The entrepreneurial perspective are concerned with the side of organizational value creation, and the macroeconomic from the side of nation wealth creation dynamics. Therefore, the value of nations, regions, organizations, and individuals is directly related to their intangible capital and depends on systems to visualize, cultivate and capitalize on value-creation dynamics (EDVINSSON, 2003; EDVINSSON; BOUNFOUR, 2004).

According PORTER (1990), the competitiveness of a nation relies on the capacity of the installed industries innovate and upgrade it continuously to a more sophisticated type. In this context, the role of the nation policies dedicated to its development and growth has becoming more and more important. To create and sustain a given competitive advantage, the nations should organize a strategic process to deal with their national values, culture, economic structures, institutions, and geopolitics' issues. There are differences in the pattern of competitiveness among countries, therefore its sources or determinants should be mapped and understood, and a particular (not a one fit size all) approach planned and implemented. In other words, according to him "National prosperity is created, not inherited" (PORTER, 1990).

Unfortunately, we have still seen nations employing policies of economic support to certain industries or sectors, based on the conventional thinking of nation competitiveness, from the mobilization of the three primary factors through physical production. Even with data published about 25 years-old by PORTER (1990) evidencing they are flawed, because they misperceived the true sources of competitive advantage. Albeit the patterns of competitiveness vary among countries, the underlying model of operation of the successful organizations is the same. They achieve and sustain competitive advantage through an incremental innovation approach, both directed to develop new technologies, new ways of doing things, and to identify information the competitors don't have or don't seek to anticipate domestic and foreign needs (PORTER, 1990).

"Simultaneously, developmental organizations are adopting a more holistic perspective of national growth that goes beyond just economic performance and includes human, social, cultural and political development and general well-being" (MALHOTRA, 2003). A movement to try measuring and managing such tendency in the macroeconomic perspective and for policy purposes' has been made by several national and international agencies such as The United Nations (UN), The World Bank, The United Nations Educational, Scientific and Cultural Organization (UNESCO), the UK Department of Culture, Media and Sport (DCMS), the World Intellectual Property Organization (WIPO), the United Nations Conference on Trade and Development (UNCTAD), Nesta Foundation, among others (BAKHSHI; FREEMAN; HIGGS, 2012;

CHEN; DAHLMAN, 2005; JONES; LORENZEN; SAPSED, 2015; MALHOTRA, 2003). They have proposed different approaches to identify and measure performance outcomes, and to classify the called creative industries, i.e. the organizations' and individuals' occupation based on a process of generating something new by combining previous knowledge or "those industries which have their origin in individual creativity, skill and talent and which have a potential for wealth and job creation through the generation and exploitation of intellectual property" (DCMS, 2015).

One good example of such behavior can be seen in UK. According BAKHSHI et al. (2012) and DCMS (2015) estimates about creative economy, the employment in this industry is a highly significant component, accounting for 8,7% of the workforce as a whole in 2010. The growth of the employment in the creative economy rose 6,8% between 2004 and 2010, which reflects more than five times the growth rate of the noncreative workforce, measured on a comparable basis over the same period. Between 1997 and 2013, it increased in a rate of 2,3% each year, around four times greater than the 0,6% increase each year in the number of jobs in the overall UK economy. In regard to the gross value added (GVA), the creative industries accounted for 5,0% of the UK economy in 2013 and has increased by 25,8% since 2008, compared to an increase of 11,4% for the UK economy as a whole.

The positive association between macroeconomic growth, competitive advantage, greater productivity, income and the intangible capital suggest a possible missing link between a given investment and its outcomes and impacts. This context forces a change in the way policies are developed, mainly in education and training, taxation, entrepreneurship, innovation, labor regulations, resource allocation and international trade. "Many current policy settings, as well as systems of accounts (both corporate reports and national statistical accounts), are best suited to a world in which physical capital predominates" (OECD, 2013b). The previous established methods of solution making have been shown limited (NORMANN; RAMIREZ, 1993). As result, we can recognize a growing demand for innovative decision-making, i.e., new ways of planning and problem solving.

Also, uncertainty, competition and a fewer time to gather information and take decisions have increased in the last years, then a dynamic strategic approach to value-creation with basis on the intangibles appear to be a valuable tool to repositioning the organizations, as well as business, projects and nations performance (BOUNFOUR, 2003b). A key guideline for a dynamic strategic approach is to continuous collect variables to understand the new challenges and rationales (ways of thinking) that influence the internal and external environments, to build a definition of future vision, and to design and, most important, to implement a dynamic action plan. The strategists need

to continuous "…peel away the veneer of what works, and understand more deeply why and under what conditions certain practices lead to advantage" (CHRISTENSEN, 2001).

These various social and economic transformations are underway, which call for a redesign in business models, organizational strategies and national systems for innovation, three fields where the intangibles can play a significant role (BOUNFOUR; MIYAGAWA, 2015). Regarding the mega event projects arena, decision-makers and managers face a vast list of challenges, already discussed in this literature review effort, such as: a) The need of a strategic vision for the mega event project related to the host city/country future demands, and a proper planning and management of impacts and legacies to maximize them; b) The insufficiency of scientific information on issues related to planning and strategic management of impacts and legacies in mega event projects, mainly in sports industry; c) The emergence of the intangible aspects as new sources of growth and the intangible assets (intellectual capital) management as an essential task for businesses that want to succeed in the new century reality; d) The uncertainties about value creation, budget allocation, return on investment and reevaluation of priorities; e) The high cost and poor performance ratio perceived by the general audience and f) The lack of reliable models and performance indicators to assess the intangible aspects of mega event projects.

In our point of view, particularly two of these challenges, the emergence of the intellectual capital as strategic factor for value and wealth creation and the general audience perception of poor performance contribute to raise the question if the traditional theoretical and empirical approaches to mega event projects performance measurement become inadequate. According FLYVBJERG et al. (2003) "… the cost-benefit analyses, financial analyses, and environmental and social impact statements that are routinely carried out as part of megaproject preparation are called into question, criticized, and denounced more often and more dramatically than analyses in any other professional field we know."

Generally, project organizers advertise a myriad of benefits and positive impacts from their mega projects to get public and political acceptance. But, these positive impacts "… repeatedly turn out to be non-measurable, insignificant or even negative…" (FLYVBJERG et al., 2003). As aforementioned, mega event projects organizers and managers are unable to have at their hands an effective diagnostic of mega events intangible assets. And, noteworthy, the ability to create economic value from intangible assets depends highly on the management capabilities of the organizations and the implementation of appropriate business strategies (OECD, 2006a). "In other words, intangibles let us reposition organizational performance in space and time" (BOUNFOUR, 2003b). Therefore, new methods of impact analysis and management

based on intangibles are needed to support the mega event projects as instrument of growth and competitiveness to nations and organizations involved.

2.3. Intangibles

2.3.1. Definitions, characteristics, elements and constituents

The intangibles and the knowledge are not particularly innovations of the XXI century, they "... exist since the dawn of civilization" (DEUTSCHER, 2008). However, researchers and practitioners have not yet reached an agreement on the definition of the intangibles and its constituents (BOUNFOUR, 2003b). In general lines, intangible capital can be understood as immaterial sources of value that can be mobilized to create wealth. According to the Oxford English Dictionary online[4], the intangible dimension is related to something "incapable of being touched; not cognizable by the sense of touch; impalpable" or "which cannot easily or precisely be measured".

The agreement hasn't even reached its nomenclature. The intangible capital is also known as 'Knowledge capital', 'Knowledge-based capital', 'Intelligence capital', 'Intellectual capital', among others. But, despite of the establishment of a single designation, the central idea of the emerging importance of the knowledge as a new factor of production is well accepted, as we could see in the last section. At the corporate perspective, the interest about the intangible capital and assets arose from the differences found between a given firm market value and its book value, measured with basis on their tangible assets. For the macroeconomic/policy perspective, the differences between national higher and lower growth rates and among developed and developing nations also suggest an explanation based on countries investment in knowledge-based infrastructure, goods and services (MALHOTRA, 2003). For the microeconomic/entrepreneurial perspective we raise two main factors, the recent findings of the strategic management literature that highlight the growing importance of intangible factors for corporate competitiveness and the recognition of knowledge and its combinations as a major source of value creation (BOUNFOUR, 2003a).

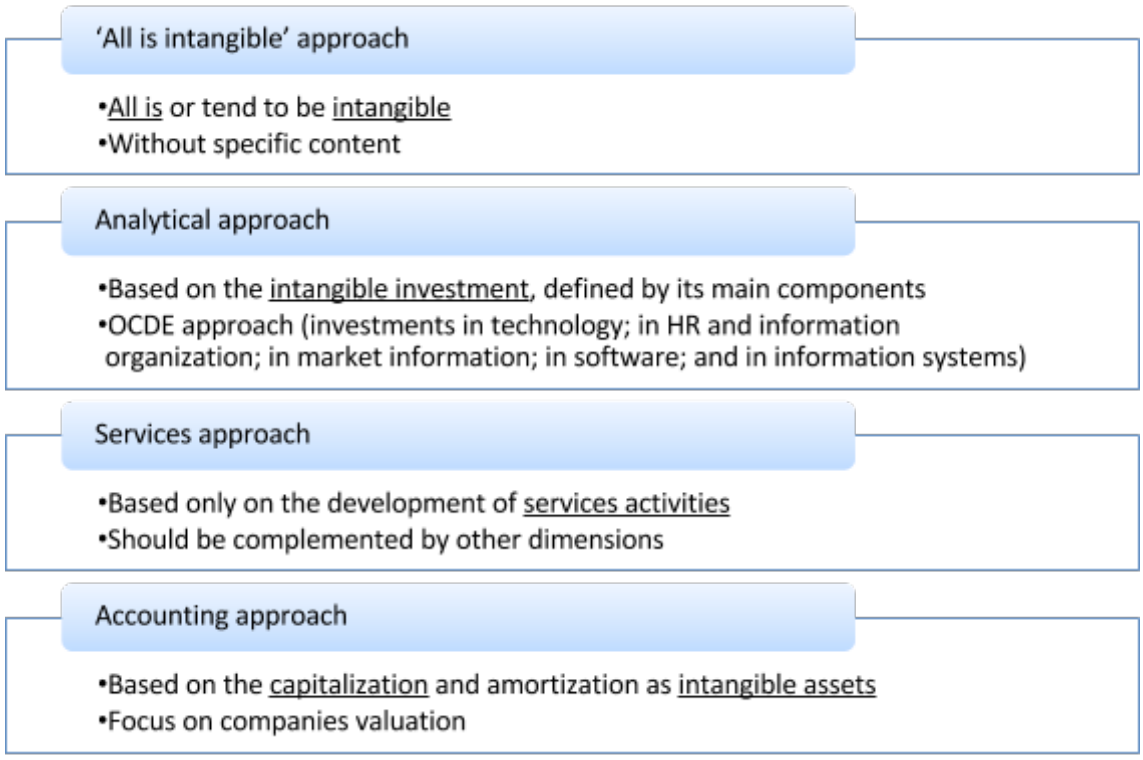
An interesting point concerning the knowledge is that it does not behave like other traditional production factors. By having a multiplication characteristic, knowledge is not a finite resource such as natural resources, physical capital and labor. Quite the opposite, knowledge can be easily and inexpensively replicated and, is amplified as it is used (ALLEE, 2000). MALHOTRA (2003) also raises the fact that the knowledge can't be measure and evaluated in the same way as physical assets, because of their non-

[4] http://www.oed.com/view/Entry/97332?redirectedFrom=intangible#eid

physical, non-appropriable and non-directly measurable characteristics, which are incompatible with the traditional financial accounting and reporting conventions. Consequently, its completely new nature demands a new way to deal with it and new patterns to measure it.

With these concerns in mind, several approaches to deal with the intangible capital have been developed, each one with specific assumptions and focus of analysis, depending on their developers' background. BOUNFOUR (2003b) provides an extensive review of the main approaches (Figure 4), which we use here as basis for discussing the main assumptions, characteristics and constituents of the intangibles, vis-à-vis the mega event projects issues and opportunities.

The simplest approach is the 'all is intangible' approach. It comprises the interpretation that all in a given organization is or tends to be intangible. This approach "…underlines the necessity of change of paradigm…" (BOUNFOUR, 2003b) presented in last section, but in analytical terms is limited because it lacks a specific content. In contrast, the analytical approach defines the intangible capital via its main components and how much is invested in their development. However, there is no agreement among the models components, varying according the different intangible capital models developed with basis on this approach.



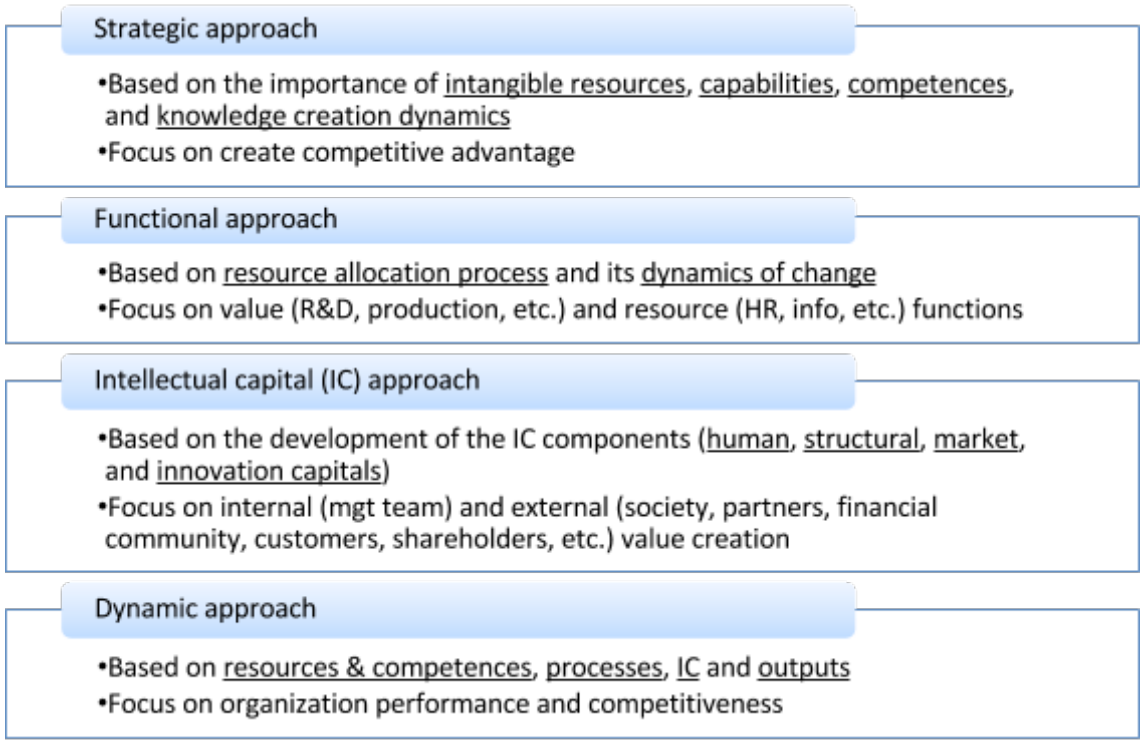


Figure 4 - The main approaches to intangibles (data from BOUNFOUR, 2003b)

The components selection generally depends on available data, and different definitions of intangible investment have been given. The OECD model, for example, is composed by 11 components divided into five groups: investments in technology (R&D, licenses, patents, engineering, observation and exploration activities); enabling investments (human resources, organization and structuring of information); investments in market exploitation and organization (identification, evaluation and anticipation of market signals, and valorization of companies' supply); investments in software (software implementation); and investments in information systems (the information systems developed internally for own use).

The services approach is based on the analysis of service activities, but as it focusing in only one dimension of intangibles, other dimensions and/or approaches should complement it. The accounting approach has as focus the accounting treatment of the intangibles for companies' valuation. Its main concern is how to deal with the capitalization and amortization of the intangible assets in the balance sheet. Such matter is a source of debate among researchers and practitioners due the different practices, norms, standards and regulations at international level. Depending on the strictness of the regulation, the accounting configuration might change and consequently the value of the organization also changes. This is a big challenge regarding the valuation and reporting of intangibles for external stakeholders, such as financial analysts, partners and investors.

The strategic approach has as core the concept of competitive advantage and focus on the identification of the dynamics of the main sources for competitiveness, based on the work of PORTER (1980); (1990). Ever since, several authors contributed with the strategic paradigm developing concepts, models and approaches with focus on intangible resources, competences and capabilities, as main levers to creating competitive advantage (BOUNFOUR, 2003a). Among others, according BOUNFOUR (2003a;2003b), we can point out the works of PRAHALAD; HAMEL (1990) regarding the core competences; QUINN (1992) regarding the intellectual and services competences; NONAKA; TAKEUCHI (1995) about the knowledge creation dynamics; NELSON; WINTER (1982) concerning the organizational routines; PENROSE (1959), BARNEY (1991), GRANT (1991) and WERNERFELT (1984) regarding the organizational resource based view; and, TEECE; PISANO; SHUEN (1997) about the dynamic capabilities view.

According the strategic approach, the lever to create competitive advantage includes the combination of the organizational tangible and (mainly) intangible resources, individual competences and capabilities. Hence, the organizations should consider developing such key resources and capabilities when designing and implementing their competitive strategy. “It is these resources that allow the development of competences and therefore the establishment of a sustainable competitive position in the market place” (BOUNFOUR, 2003b)

The functional approach, founded on a strategic paradigm, takes advantage of this combination of the resource allocation process, but is based on its dynamics of change. It is considered by two functions, the value and the resource, within the value-added chain, i.e. the set (or chain) of activities that an organization performs in order to deliver value-added products or services for the market. The value function is concerned by the patents, licences, designs, trade marks, innovation processes and tools (in Research and Development chain); capacity and quality of production systems, and competitive outsourcing capabilities (in Production chain); procurement systems and capabilities, capacity and quality of information systems and communication networks (in Logistics chain); and, market research, advertising, direct marketing, organizational communications, distribution channels, quality of commercial / communication systems and tools (in Commercialization, distribution and communication chains). The resource function is concerned by human resources training and development, organizational structure and development, and development of specific competences (in Human resources, organization and competence building chain) and; mergers and acquisitions, legal services, consultancy services, accounting, etc. (in Trans functional support services chain).

The intellectual capital (IC) approach is based on the modeling and leveraging the organizational intangibles resources, mainly from an inside perspective. In operational terms, they are founded around the identification and development of specific IC components: Human capital, customer capital, innovation capital, process capital, etc. The IC components taxonomy varies according the modeling, but for each component (whatever the model) specific performance indicators are proposed. “The basic idea is to develop a sort of dual accounting approach on intangibles, which may take the form of publishing an IC report…”(BOUNFOUR, 2003b) towards the adoption of a stakeholder perspective.

A four intangible component / dimension is the most used typology. It refers to the Human, Structural, Market and Innovation capitals. The human capital is related to the set of knowledge and routines carried inside the minds of the organization members, such as the people’s tacit knowledge, collective capabilities, quality of teams, motivation, etc. The structural capital refers to the all intangible items separable from people’s tacit knowledge, such as patents, trademarks, databases, softwares, etc. The market capital includes the patrimony-related customer relationship, such as reputation, shares of market, customer contacts, etc. And, finally, the Innovation (renewal and development) capital encompasses the innovation capabilities of the organization (BOUNFOUR, 2003b).

Finally, the dynamic approach is based on a dynamic view of the organizational performance and development as the main focus for action. Since we can no longer disconnect the sources of value creation from their place of expression, the integration of these various sources of value creation (resources, competences and processes) have to be linked with the manifestation of the intellectual capital value (outputs) in a dynamic way for a better economic and financial leveraging.

From the financial perspective, the indicators may help us to reduce the asymmetry of information, since “… the value of a company depends largely on the valorization of its intangible assets” and “From the management point of view the building of competitive advantage founded on intangible factors is mainly ensured via the deployment of a ‘combinatory function’ of intangible resources” (BOUNFOUR, 2003b). To deal with this issue, the dynamic approach was developed with basis on the concepts of resource based view (RBV) and dynamic capabilities view. The resource based view (RBV) is an attempted to look at organizations in terms of their resources rather than in terms of the products or services that they generate. It can give us a different and perhaps richer perspective on their growth prospects.

The resources could be defined as those tangible and intangible assets which are tied to an organization (WERNERFELT, 1984). According the same author, the

resources to be considered are the fixed assets, such as plants and equipment; the blueprints, such as patents, brands and firm reputation; and the culture (team effects, routines, collective know-how). BARNEY (1991) and GRANT (1991) add also the human, technological, financial and others organizational resources. The great part of such resources are considered as specific and non-tradable, imitable and nor transferable. Thus, the organizational strategy is influenced by the portfolio of resources available at a given period (BOUNFOUR, 2003b). The RBV importance is related with its contribution to the establishment of a new vision of organizational performance through "… a simple message for long-term performance: companies have to be considered as a portfolio of resources, tangibles and, more importantly, intangibles" (BOUNFOUR, 2003a). It is from the identification, development and exploitation of the organization resources and capabilities that we can provide a basis for addressing some key issues in the formulation of the organization strategy, create an advantage and keep its competitive position in a sustainable manner.

For BOUNFOUR (2003a), the RBV seems to be the most suited vision to the knowledge economy since "…resources and competences are still 'hidden values', not sufficiently valorized in the marketplace." In operational terms, the organization may focus their strategies more on the identification and development of the key resources, capabilities and competences, than on the industrial structure analysis and product/service market positioning. To do that, GRANT (1991) suggests a process of strategic analysis based on five phases: a) analysis of the resource basis of the organization; b) evaluation if its capabilities, c) analysis of the potential of profitability of resources and capabilities, i.e. its generation of revenues, d) the selection of a strategy, and e) definition of how to extend and improve the pool of resources and the capabilities of the organization.

The Dynamic Capabilities View is a concept developed by TEECE et al. (1997) to identify the dimensions of a given organization capabilities that can be sources of competitive advantage. It also pursues to explain how combinations of internal and external competences and resources can be developed, deployed and protected to address changing environments. This concept emphasizes the development of management capabilities and difficult to imitate combinations of organizational, functional and technological skills. Its development was motivated by the fact that "Winners in the global marketplace have been firms that can demonstrate timely responsiveness and rapid and flexible product innovation, coupled with the management capability to effectively coordinate and redeploy internal and external competences." (TEECE et al., 1997) According this view, it is not only necessary accumulate a large stock of valuable assets, but also you should develop many useful capabilities to deploy

them. This point of view is also shared by other researchers, such as SVEIBY (2000), for whom the value creation and competitive advantage have no relation with the amount of knowledge gathered, but with the quality of their usage, and MALHOTRA (2003), who mentioned that the mere access to information and knowledge may not automatically result in value creation.

The dynamic capabilities emphasize two key aspects. The dynamic 'portion' refers to the capacity of a given organization to renew competences so as to achieve correspondence with changing environments. The capabilities 'portion' refers to the key role of strategic management in properly adapting, integrating and reconfiguring internal and external skills, resources and functional competences to match the requirements of the environment. In summary, the organization must be approached as a set of tangible and intangible resources, those allowing the development of competences necessary to the establishment of competitive advantage in a dynamic attitude to integrate, reconfigure, deploy and protect its sources of value, and develop products and services based on the organizational competences (BOUNFOUR, 2003b).

According BOUNFOUR (2003a), the current practices to deal with the intangibles are of two types: those relating to the knowledge management (KM) as a managerial practice, and those referring more specifically to the measurement and the development of the intellectual capital (IC). The following section (2.3.2) presents and discuss the KM traditional structures, whereas the section 2.3.3 presents and analyses the IC measurement and reporting, focusing on the key models already published to measure intangibles that could be applied on the context of the present study, and the manner which they capture the information.

2.3.2. Traditional intangibles management structures

In the last decades, managers and economists have become aware of the importance of intangibles measurement and management. Such behavior is related to structural changes that are occurring within this period, such as the fast growth of service industry; the wider dissemination of information and communication technologies (ICTs); the transition from a traditional manufacturing system, based on the scale, for a new structure based on innovation-intensive activities; the recognition of knowledge as the main source of value creation; and the evidences argued in the section 2.2.2 about the leading role in the acquisition of intangibles to maintain the competitive advantages (BOUNFOUR, 2003b; OECD, 2008).

In today's global environment, several authors consider knowledge management the next generation of business administration (FRID, 2003). The organizations, businesses

and nations that wish to achieve success and long-lasting legacies must adapt themselves to the new Era. This fact can be supported by the observation of the recent corporate practices. The most part of the competitive strategies implemented comprises an intangible dimension, and the intangible capital constitutes the base of nations and companies strategies (BOUNFOUR, 2003b).

In practical terms, a key strategic task for organizations and businesses that wish to succeed in the new knowledge economy is to implement information and knowledge management systems (CANONGIA; SANTOS; ZACKIEWICZ, 2004; CAVALCANTI; GOMES, 2000;2001). Even more for those organizations, which produce or deliver knowledge-intensive (intangibles) 'products'. For these organizations, the traditional instruments used by managers and decision-makers are proving to be insufficient to deal with current complexities (ALLEE, 2000; BOUNFOUR, 2003b), such as in the mega event projects arena (RODRIGUES et al., 2015; VILLANO, 2009).

Some scholars (HSM, 2000) consider bigger investment in knowledge a key factor for economic growth in all sectors. It can be developed by encouraging the organization to invest in a) research and development, b) education and training, and c) innovative approaches to work activities in a daily basis. CAVALCANTI; GOMES (2000) go further, and advocate that the knowledge productivity should be the central concern of business administrators. But, the knowledge will only generate the expected results if it is managed throughout its value chain, based on the management of the Intellectual Capital and if the knowledge managers can create and leverage the existing resources in a given organization (or business, or project), and outside it, to create an interactive learning environment in which the workforce can transfer, internalize, and, mainly, apply the knowledge in innovative and creative solutions (CAVALCANTI; GOMES, 2000). In other words, “knowledge-intensive enterprises demand a new approach to work, organization, accounting and way of doing business” (ALLEE, 2000).

Different taxonomies have been developed to understand the role of knowledge and other intangible factors as driving factors to competitiveness and economic growth. Based on some reviews, both scientifically and market oriented (CANONGIA et al., 2004; HSM, 2000), we can identify common assumptions in knowledge management systems, including: a) to add value to information and distribute it; b) to facilitate "interactive knowledge flows" through the organization; c) to encourage continuous learning; d) to encourage the participation of all components, and finally; e) to support the interaction (and integration) processes within individuals and organization.

In summary, the central concept of knowledge management is to leverage current resources in the organization (and outside it), to create an interactive learning environment in which individuals transfer, internalize, and, especially, apply the

knowledge in pursuit of innovative and creative solutions. It is Important to note that the goals of knowledge management differ from information management. While the latter is concerned with the information organization and delivering, the former focuses on systematizing what is done with the information (FRID, 2003).

However, value creation and competitive advantage have no relation with the amount of knowledge gathered, but with the quality of their usage (SVEIBY, 2000). “Mere access to information and knowledge may not automatically result in value creation” (MALHOTRA, 2003). Therefore, the issue of how to measure the accumulation and, especially, the usage and management of intangible assets and resources should become a major concern for managers and decision makers who want to succeed in the Knowledge Economy. “...from the internal management standpoint the lack of intangible accounting impacts in investment decision-making...” (DEUTSCHER, 2008).

With this issue in mind, a vast proposition of theoretical concepts for business management in the Knowledge Society have been proposed in the scientific and practitioner’s literature, most of them centered on value-creation processes. For example, we can cite the KAPLAN; NORTON (1992) Balanced Scorecard (BSC), the SECI model from NONAKA; TAKEUCHI (1995), the Skandia Navigator proposed by EDVINSSON; MALONE (1999), the CRIE Enterprise Intelligence approach from CAVALCANTI; GOMES (2001).

The most well-known models are the KAPLAN; NORTON (1992) Balanced Scorecard (BSC), from the IC approach, and the NONAKA; TAKEUCHI (1995) SECI Model, from the strategic approach. The Skandia Navigator was proposed by EDVINSSON; MALONE (1999) in 1991 at Skandia, an insurance Swedish company. The Skandia Navigator aspiration was to be a system to visualize and reporting the critical factors intended to make tangible the company’s intangible investments. According the authors view, the intangible capital of a given organization is divided in three basic dimensions: human capital, structural capital and customer capital, and have to be analyzed though a set of indicators in a five component focus: financial, customer, process, human, and renewal and development. The human capital dimension refers to the employees and managers collective knowledge, competences, capabilities, skills, experiences, creativity and innovativeness. The structural capital includes the organizational processes, procedures, technologies, information, intellectual property and other infrastructure to support the human capital. And the customer capital is represented by the organization relationship with customers, suppliers, partners, business associations and other stakeholders.

In the financial focus, the indicators may identify and measure the incomes generated by the investment in intangibles. In the costumer focus, the indicators aim translating the

quality of the relationship between the organization and its customers. In the process focus, they are concerned with the quality and productivity of the IT systems, equipment and technical staff management. In the human focus, they may measure the human resources performance. And, in the renewal and development focus, the indicators are concerned to the development of the organization's capabilities. Hence, the financial focus expresses the past of the organization; the costumer, the process and the human focuses express the present of the organization; and the renewal and development focus expresses the future of the organization.

With the Navigator model, EDVINSSON; MALONE (1999) sought to identify the roots of the organization value by identifying and measure the hidden factors that underlie "the visible company". Thus, they built a value scheme (figure 5) that contains both financial and non-financial items, trying to uncovering and visualizing the organizational intellectual capital and tying the strategic vision with the core competencies of the organization. The Navigator, in summary, could therefore, better reflect the organization value, as well as serve as a navigation map to help managers and decision-makers better manage their organizations. "The evaluation and the navigation reveal themselves as the two sides of the same coin" (EDVINSSON; MALONE, 1999).

The Navigator can be applied, in the management sense, as a framework to develop the organization mission and key objectives, the same way the Kaplan and Norton BSC is used. The strategies could be ultimately converted in success-factors or KPIs. To better manage the IC, EDVINSSON; MALONE (1999) suggest a four step process: 1) To understand the Navigator elements that indicate a possible value creation and exploitation; 2) To amplify this value by the interaction and development of the non previously detected capacities; 3) To focus on the flow, exchange and transparence of competencies within the organization; and 4) to capitalize the value scheme (figure 5) spreading the components by coding, recycling and exchanging them. Thus, the Navigator highlights that the IC management is far from the simple management of the knowledge and of the intellectual property rights.

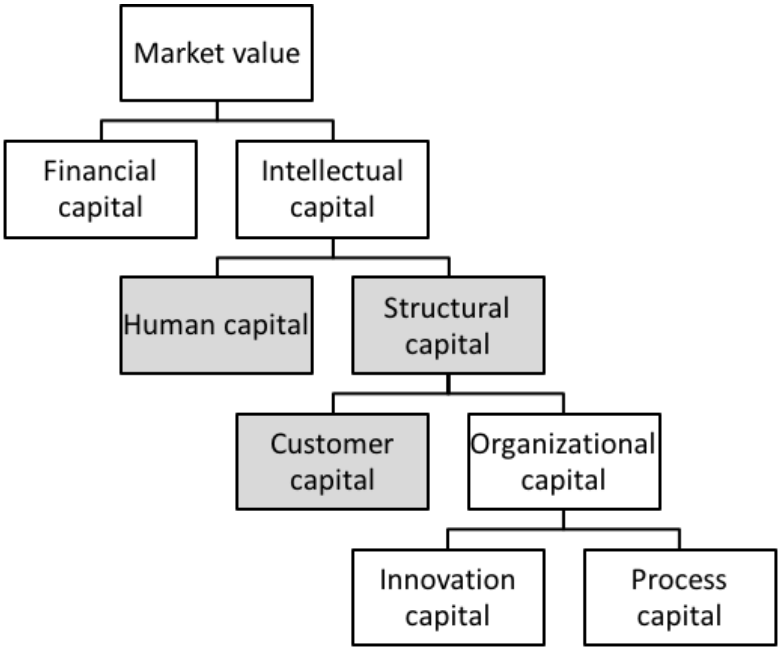


Figure 5 - The Skandia Navigator value scheme (EDVINSSON; MALONE, 1999)

The CAVALCANTI; GOMES (2001) Enterprise Intelligence concept can be defined as "… the ability to gather, to analyze and to disseminate data, which delivers, in a systematic and structured way, relevant information about the organization external environment and internal perspective, for decision-making and strategic guidance..." (COUTO, 2000). According CAVALCANTI; GOMES (2001), it represents the cooperation that must happen between knowledge, innovation and entrepreneurship (Figure 6).

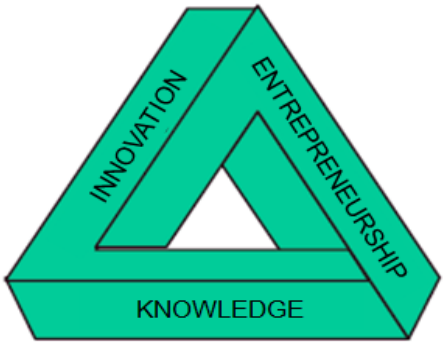


Figure 6 - The Enterprise Intelligence concept (CAVALCANTI; GOMES, 2001)

The enterprise intelligence concept is complemented by an IC approach model proposed by the Reference Center on Corporate Intelligence (CRIE-COPPE/UFRJ) (CAVALCANTI; GOMES, 2001). Four dimensions compose the CRIE model (figure 7), three of them related to the organization internal perspective (intellectual capital,

structural capital and relationship capital) and one to the external environment (environmental capital).

In the internal perspective, the intellectual capital refers to the workforce abilities, skills, attitudes, knowledge and experiences to deliver value to its customers. The structural capital represents the administrative systems, concepts, models, practices, procedures, manuals, organizational structure, management tools, brands, patents, information technology systems and the organization's culture. This set of items is generated by the workforce, but is kept by the organization. The organization, and its employees, the networks and the strategic alliances with its suppliers, partners and customers characterize the relationship capital.

Regarding the external perspective, the environmental capital can be defined as the set of factors that describe the environment in which the organization operates, i.e., its ecosystem. It involves the socioeconomic characteristics, such as formal education level, income distribution, birth rate; the legal aspects; the ethical and cultural values, such as entrepreneurship; the governmental aspects, such as government grade participation, political stability, and; the financial aspects, such as interest rates and adequate financial mechanisms.

According CAVALCANTI; GOMES (2001), the organizations have to know the environment in which it operates and have an accurate definition of its strategic vision, its market position and its industry. Moreover, it is essential "… to be alert to the changes, to be flexible, to realize the technological innovations, and to understand that information and knowledge are strategic factors" (CAVALCANTI; GOMES, 2001). Furthermore, managers cannot forget that creating a culture of excellence and aligning its activities with the needs of customers should be considered. Yet according the authors, "The definition of the strategic vision can be done through traditional planning, but the analysis of the organization's positioning in the market…" i.e., the environment which it operates must be made through Competitive Intelligence. Competitive Intelligence is a systematic and ethical instrument used by organizations to identify, to collect and to interpret relevant information about the activities undertaken by competitors and partners and business tendencies (CANONGIA et al., 2004; CAVALCANTI; GOMES, 2001).

CAVALCANTI; GOMES (2001) also recommend that managers should consider the political, social, technological and economic issues, and the players in the business environment. However, only to monitor the external environment is an insufficient condition for performance excellence in the Knowledge Economy. Aiming to generate competitive advantage, both the external and internal environments must be in perfect harmony and the workforce shall be committed to organizational strategic goals. The effective knowledge management depends more on the synergy between the four

dimensions (figure 7), than the management of each of them individually (CAVALCANTI; GOMES, 2001).

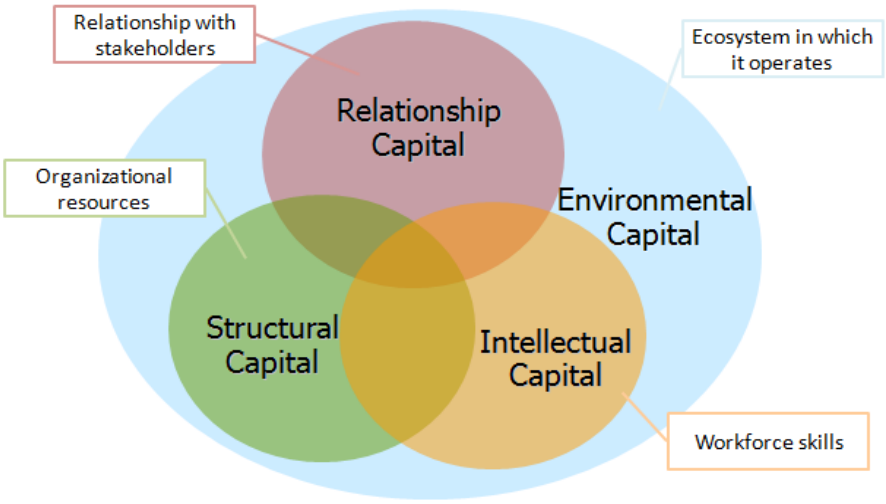


Figure 7 - Synergy between the four knowledge capital dimensions (CAVALCANTI; GOMES, 2001)

In 2007, the conceptual model described above was used as a basis for an intangible assets measurement tool, focusing on a system of qualitative metrics for companies' assessment by the Brazilian Bank of Economic and Social Development (BNDES) called Intangible Capital Rating (DEUTSCHER, 2007;2008), which will be described in details in the next section.

2.3.3. Intangibles measurement and reporting

Despite of the growing interest about the intangibles as lever of value and wealth creation, competitiveness and economic growth, the measurement and reporting of the IC and intangible assets is a complex and controversy subject. There are different visions regarding on how to enhance its quality and usefulness. But, a consensus was reached about the fact that a better and consistent measurement and disclosure of the intangibles, could have a positive impact on performance by improving internal controls and risk management, raising the quality of strategic decision and increasing overall transparency for the stakeholders (OECD, 2013b). These facts raise questions about the sustained importance given only on the tangible financial data analyses, and place growing emphasis on non-financial ones as a way to fill the information gap. But, instead of change an approach by the other, the tangible by the intangible, most approaches to

intangibles highlights that the real paradigm shift is that the intangible data measures must complement the traditional tangible ones.

According to LÖNNQVIST (2002) there are two major perspectives for the intangible asset measurement and evaluation throughout the literature. The first is concerned with capturing and expressing the performance of a particular organization (or project, or business) in achieving its goals, according to a specific strategic vision. With this goal, the intangible asset evaluation could be analyzed on different dimensions and require the establishment of indicators, often called success factors or key performance indicators (KPIs). These indicators are key aspects that should be measured to reflect how far the organization is in its vision for success, according to predefined goals and strategies.

The second perspective focuses on estimating the value of an organization (or project, or business) to better explain the composition of its total value or its market value. In this matter, the point is the estimation of intangible capital as sources of intangible value, usually related to the employee's skills (Human Capital), the organization's resources and operation approach (Structure Capital), and the relationship with its stakeholders (Relationship and Environmental Capitals). In both cases, knowledge managers should concern with to identify what would be the managerially relevant intangible assets and success factors, and to identify the activities related to improving or utilizing the assets (LÖNNQVIST, 2002).

Beyond these two perspectives a vast number of models have been developed. In an attempt to increase the understanding about the objectives and limitations of different models of intangible capital measurement, SVEIBY (2010) followed the intangible's literature between 2001 and 2010. During such period, he identified 42 (!) different models for measuring intangibles. The differences between the models arise from the different perspectives to deal with the complexities regarding the measurement of the intangibles. "Some models focus primarily on financial metrics and offer a restricted notion of knowledge assets. Other take a more holistic view but require subjective judgment in determining a composite index that may be used for objective comparisons" (MALHOTRA, 2003).

The SVEIBY (2010) analysis focused only on purpose and objectives of the intangible assets measurement. Defending his point of view that none of models could fulfill simultaneously all measurement purposes, he suggested that the managers must select the method depending on their purpose, situation and audience. In order to facilitate the model selection, SVEIBY (2010) proposed a classification system in four categories of measurement approaches: a) The Market Capitalization Methods (MCM), b) the Return

On Assets (ROA) methods, c) the Direct Intellectual Capital (DIC) methods, and finally, d) the Scorecard (SC) methods.

The MCMs calculate the value of intangible assets, in a given organization, by measuring the difference between the market value and the book value, i.e., the shareholders' equity. The ROA methods utilize the ratio between the average pre-tax earnings and the average tangible assets of an organization in a given period of time. The DICs methods provide an estimate of the value (in financial terms) of intangible assets by identifying the value of its different components. Once identified, these components can be directly evaluated by an individual or aggregated coefficient. Finally, SCs methods provide indicators and/or indexes that are reported in form of scorecards and/or graphics, also from the identification of the various components of intangible assets. The SCs methods may return a composite index or not (SVEIBY, 2010).

Also according to the author, each approach presents different advantages and disadvantages. The MCMs and ROAs could be useful in comparing the same industry organizations; in cases of mergers and acquisitions; and even in the assessment of market value (valuation), since they are good for illustrating the financial value of intangible assets. Its disadvantages are related to the risk of becoming superficial models, since it translates the intangibles into financial terms, and the limited use for management purposes, additionally they are not applicable to nonprofit organizations, organizational departments or public sector. The DICs and SCs have the advantage of allowing a more comprehensive view of the organizational situation. They can be used in different management levels, and can measure and report closer a given event, therefore, reporting accurately than simply financial measure. Consequently, they are more useful for strategic and organizational demands and for public and nonprofit sectors. Its disadvantages are related to a) the difficulty of making comparisons, since the indicators should reflect a particular context and have to be customized for each organization; b) the prejudice of some managers, whom are limited to decisions-making "… from a pure financial perspective"; and c) the generation of large amounts of data, in case of more comprehensive approaches, which can make the treatment of information and its communication harder (SVEIBY, 2010).

BONTIS (2001) also reviewed the literature concerning the assessment of knowledge assets, but his focus was summarize the existing knowledge about trends and features and highlight the strengths, weaknesses and operationalizations of some existing models that attempt to measure the IC. According to him, in 2001 "… measuring knowledge assets is in an *experimental* (author emphasis) phase where a myriad possible solutions (i.e. new concepts, definitions, criteria and operational measures) are being promoted and tried." Currently, about 15 years ahead, we can realize in this

literature review that the concepts, definitions and criteria are subject of somewhat evolution. But, we are still looking for improve the operational measures and finding new applications and contexts to the intangible measurement. We also agree with Bontis when he points out that “A way to overcome this challenge is for researchers to pursue more empirical research" (BONTIS, 2001), one of the facts that justify the present study.

BONTIS (2001) also contributed with propositions to a future research agenda for the IC. Among the recommendations, and despite of the challenges in doing them, he suggested that a) researchers must move from perceptual measures in isolated cases to a large-scale approach with objective measure; b) the IC measurement may also attempt to capture the flows of intellectual capital into financial capital and vice-versa; and c) there is a need of more international research, out of the “Anglophonic bias”, to try to show that the relationship between IC and performance can be generalized to other nations and industries. However, he didn’t develop the argument explaining what kind of objective measures might be collected. Despite of the potential contribution from a large-scale approach with objective measures to produce evidence to establish cause-effect relationships between IC and firms (and nations) performance, we have some skepticism from this positivist approach, since the use of only objective measures tend to reduce the essence of the intangibles or lay down on the utilizations of a “long list of multiple indicators” based only on tangible proxies. And as BONTIS (2001) himself cited, the danger is that the “…IC management systems contain any number of unconnected and unproved individual indicators.”

“Knowledge and knowledge-based capital are essential for competing in the economy of the 21st century…", but measuring these assets have yet remains a challenge (OECD, 2013b). The sources of difficulty arise from some issues and challenges in measuring the intangible capital. Actually, the knowledge itself is particularly hard to quantify. "An unknown proportion of knowledge is implicit, uncodified and stored only in the minds of individuals. Terrain such as knowledge stocks and flows, knowledge distribution and the relation between knowledge creation and economic performance is still virtually unmapped” (OECD, 1996). SVEIBY (2010) agree with this point of view. For him, there are two main constraints in this subject. The first is the difficulty of the measurement systems in “… measure social phenomena with anything close to scientific accuracy”. This fact occurs because of the approaches have to rely on proxies and indicators that usually are far from the action that led to the phenomenon. The second constraint would respect the purpose for which the measurement initiative is being performed. Concerning this constraint, SVEIBY (2010) does not recommend that the intangible measurement be held for management control purpose, and poses limitations in interpreting initiatives focusing on public relations. His suggestion is to use

the intangibles measurement for learning purposes, such as exploring value creation opportunities or uncover hidden costs in traditional accounts.

BOUNFOUR (2003b) also pointed out some “problematic issues" and difficulties in measuring intangibles. Such issues limit the development of the intangible measurement to reach its full potential and they should be subject of future research to clarifying them. According him, they are related to data availability, data collection, difficulties in measuring the nature of the knowledge, and the valuation of networking activities and stock markets. Foremost, there is no availability of sufficiently reliable, comprehensive and detailed data in the knowledge economy context. Only few systematic data are available, but they are of limited validity, great heterogeneity and often not comparable to other data. There is also a lack of disaggregate data, which also limits the comparison between different regions, countries and sectors. Particularly on the service activities, this low data availability is critical because of the growing importance of such industry to the world GDP. Concerning the data collection, “Collecting data on intangibles is not an easy exercise, since most of the items require preliminary clarification and codification” (BOUNFOUR, 2003b) and confidentiality. The qualitative data collection is time-consuming and depends on the people availability.

Other issue, of fundamental nature, is that until now we don’t know how can we measure the different types of knowledge (e.g. know-why, know-what, know-how, and know-who, according the OECD taxonomy) and their combination. Provide answers on this sense that can be readily implemented in practice should be one of the most important issues in IC research. Regarding the valuation of networking activities, the conventional “areas” of analysis, such as firms, sectors and industries seems to become limited since the nations and organizations share resources and assets, and develop ideas, products and services in a collaborative way via networks. However, the utilization of clusters and chains has yet poses challenges regarding identity and legal configuration. A similar behavior is perceived regarding the stock markets, in which the traditional econometric methods and current intangibles indicators have shown limitations in explain the periods of strong growth and crises. Both the factors presented by BOUNFOUR (2003b) and SVEIBY (2010) suggest that intangible investment can be underestimated within the whole economy. Thus, new measurement approaches are necessary to produce consistent and long-established intangible indicators.

These issues and challenges in measuring the intangible capital also pose a real problem for assessing the performance of organizations, nations and their projects. We are dealing, nowadays, with a performance paradox. At the same time we know that the traditional linear physical paradigm represent less and less the true state of corporate and national performance, and their “… performance depends largely on the quality of

their intangible resources, and their capacity to maintain and develop them over a long-term period" (BOUNFOUR, 2003b), the management, decision-making, legal and accountant practices continuously rely on the former. Therefore, it is important to analyze the specificity and dynamics of the existing metrics and methods to measure and evaluate the intangibles in a macroeconomic and policy dimensions.

As we saw in the section 2.2, the traditional metrics and indicators, such as the GDP, guide the policy decisions of governments and a broad range of economic actors since the 1930's. The problem is that they, alone, are not suitable anymore taking into consideration the context of the knowledge economy. Since it works in a different manner from traditional economic theory, current indicators may fail to capture fundamental aspects of performance and could (may?) lead to misinformed economic policies and business decision-making. Actually, "The traditional economic indicators have never been completely satisfactory, mostly because they fail to recognize economic performance beyond the aggregate value of goods and services" (OECD, 1996). According the OECD (1996) recommendations, "To fully understand the workings of the knowledge-based economy, new economic concepts and measures are required…". To do that and improve the indicators for the knowledge economy we have to measure the knowledge and its inputs; stocks and flows; outputs; networks; and learning. With such concern in mind, BOUNFOUR (2003b) recommended that "In many cases qualitative information would be helpful in pointing the way forward."

Hence, we made efforts to identify approaches and models to measure and evaluate the intangibles, which could be applied in the context of mega event projects taking into consideration the above recommendations, particularly the BOUNFOUR (2003b) about the qualitative information that would be useful with a focus in pointing a way forward. On the following paragraphs, we present the models identified according the following taxonomy: a) Brief model presentation; b) Description of the purpose and applicability that motivated its development; c) Key assumptions and expected results; d) Main technical details, such as operational description, measurement variables, degree of depth, complexity and limitations; and finally, e) "Fertility", i.e., the capacity of utilization in other fields different from which was created. In summary, we intend to analyze the principles and fundamentals of the key models already published concerning the policy dimension and the manner which they capture the information. This analysis will lead us to understand the best developing practices and in what extend the models can measure the intangible assets and resources in the mega event project context.

The first model identified was the Intangible Capital Rating (DEUTSCHER, 2007;2008), developed by the CRIE-COPPE/UFRJ researchers jointly with the BNDES experts. The BNDES mission is "Promoting sustainable and competitive development of

Brazilian economy, generating employment and reducing social and regional inequalities". Its activities are concern with financing projects investment, equipment acquisition and export of goods and services through all economic industries, since agribusiness to service sector as well as industry, commerce and infrastructure. The partnership between BNDES and CRIE was motivated due to the bank realized the need to take into account the intangible assets in the risk classification (Rating) to finance knowledge-intensive organizations. At that time, BNDES risk analysts could not capture all relevant information to a proper decision-making, since they only take into account the tangible assets demonstrated in proponents' financial statements of their credit programs.

According to DEUTSCHER (2007), the development of the instrument was motivated to assist the BNDES "... managers in investment guidance and negotiating with lenders and investors". The model was created with the purpose of enabling investors and other stakeholders to identify the competitive position of the organization being evaluated in relation to the market, and encourage managers to create action plans to build or acquire intangible assets to sustain its competitive advantages (DEUTSCHER, 2008).

Its conceptual model is composed by six intangible capital dimensions: strategic, environmental, structural, relationship, human and financial (table 1). It uses as its starting point the Knowledge Capital model proposed by CAVALCANTI; GOMES (2000) already described. According DEUTSCHER (2008), it has three main advantages. The first one is the addition of the Dynamic Capabilities theory perspective, proposed by TEECE et al. (1997). Such incorporation has contributed to the addition of the strategic capital dimension and the subordination of others dimensions to it. The second is the introduction of the social capital perspective, following the directives of ALLEE (2000) and CAVALCANTI; GOMES (2000). The third is the evaluation system incorporation to the organization's business plan and, consequently, to its strategy and market opportunities.

The six dimensions of intangible capitals encompass a group of 19 assets, as follows. Important to note that during the indicators allocation, DEUTSCHER (2008) point out that "... is important that all these indicators are common to all firms in a country or region, regardless of industry".

Table 1 - The Intellectual Capital Rating intangible capitals and assets (DEUTSCHER, 2008)

Capitals (6)	**Assets / Competencies** (19)
1. Strategic	1.1 Apparatus / Competence in monitoring the market
	1.2 Apparatus / Competence in Formulating, Implementing and Following-up the strategy.
2. Environmental	2.1 Financing System
	2.2 Regulatory Environment (Institutional Aspects)
	2.3 Innovation Environment (P&D) and Entrepreneurial Spirit
	2.4 Infra-structure and logistics
3. Relationship	3.1 Clients / Contract Portfolio
	3.2 Suppliers
	3.3 Trademarks - Reputation
	3.4 Network – Interaction with the stakeholders
	3.5 Insertion in the Market
4. Structural	4.1 Corporate Governance
	4.2 Processes
	4.3 Innovation Capacity
5. Human	5.1 Administrators
	5.2 Operators
6. Financial	6.1 Trustworthiness of the Administrator
	6.2 Strategic Risk Administration
	6.3 Financial Intelligence

The strategic capital is composed of two assets: a) Competitive intelligence, i.e., the competence in monitoring the market, which deals with the information capture and processing and its transformation into knowledge, and the dissemination of knowledge, and b) The strategy formulation, which can be understood as the competence in formulating strategy, implement the action plan, and monitor its results and consequences.

The environmental capital is structured into four assets, external to the organization, regarding to the ecosystem where the organization operates; its culture and values; political, economic, social, environmental issues concerning infrastructure, entrepreneurship, etc., such as: a) the regulatory environment; b) The financing system; c) The innovation and entrepreneurship environment, d) infrastructure and logistics.

The structural capital was divided into three assets: a) processes, which aim the organization operational efficiency; b) the innovative capacity, represented by the implementation of market intelligence and the launching of new products, services, processes, etc.; c) corporate governance, related to attitude toward minority groups, transparent communications, and external control by an independently board.

The relationship capital was composed of five assets: a) the clients, who must be retained; b) the suppliers of resources, needed to maintain competitiveness; c) the networks, partnerships and strategic alliances, who must be retained; d) the trademarks

and reputation, the identity / brand perception by external and internal audiences; and e) the level of market insertion.

The human capital, consisting of the adequacy of skills, commitment, motivation and retention of its two assets: a) managers, who work in strategic levels; and b) operators, who act on activity implementation levels. And finally, the financial capital, divided into three assets: a) the managers trustworthiness and reputation; b) the financial risk strategic management competence; and c) the financial intelligence competence.

During the validation process, the model was applied in developing an action plan in a Design exporting consortium. In this approach, DEUTSCHER (2008) sought to identify the consortium vision, as a whole and an individual basis; the value proposition; the strategy and the action plan for required assets construction and gathering.

The second model enrolled was the Intellectual Capital dynamic Value (IC-dVAL). This Model was developed by BOUNFOUR (2003a;2003b) with the objective of combine the financial value of the intangibles assets with the internal performance of the organizations. It comes from a need identified by the author for developing a dynamic vision for the organization performance and competitiveness. Such dynamic vision represents a dynamic combination of capabilities that articulate "…the process of value creation around generic and specific organizational processes" (BOUNFOUR, 2003b). This dynamic vision has been continuously confronted with the static view of the organization, perceived only as a set of resources that might be combined.

The expected result is the identification and measurement of the IC performance, in such a dynamic vision, looking for an alignment between the processes driven to value-creation from stakeholders' point of view. So, three types of values have to be integrated in a consistent way, the value driven to the shareholders, to the clients and to the organization itself (the internal value) (BOUNFOUR, 2003b). To reach this result, the IC-dVAL Model is composed by four dimensions (figure 8) which, in the point of view of the author, are determinants for building competitive advantage from intangibles: a) the resources and competencies, as inputs to the production process; b) the processes, as a way through the company's strategy can be deployed; c) the intellectual capital, the combination of assets and resources which can serve as basis for the strategy; and d) the outputs, the indicators related to traditional manner as corporate performance is measured and perceived, in a tangible level.

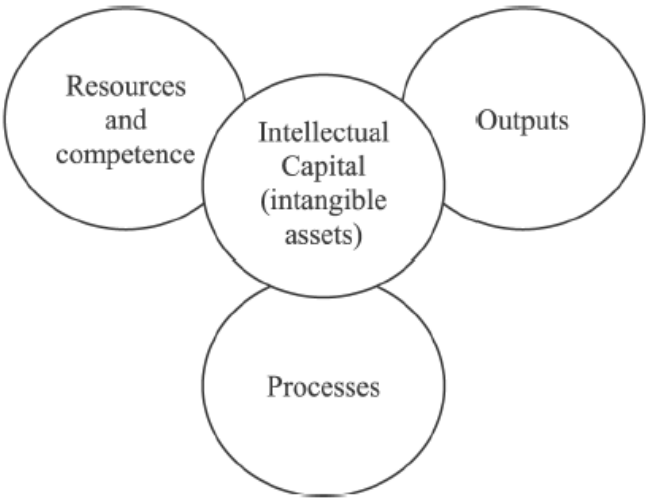


Figure 8 - The IC-dVAL conceptual model (BOUNFOUR, 2003a)

In practical terms, four steps have to be followed to build the Bounfour's dynamic approach to the IC (BOUNFOUR, 2003b). First, we have to identify the critical processes, i.e., the key processes driven to generate value for each component (shareholder, client and internal). After, we have to benchmark the organizational performance with those organizations considered 'best-in-class' or 'gold-standard', and quantifying the items for each dimension (resources, processes and outputs) in relative terms, by a series of indicators. Third, we have to evaluate the overall organizational performance for all the considered activities. This is done by an index, called overall performance index (OPi). Finally, we can calculate the overall IC value for the whole organization.

In the critical processes identifications step, the objective is to identify the key internal routines designed for the accomplishment of specific value functionalities. Such process can be divided in two groups, those which generate value-added services or products for clients and shareholders, the value process, and those of internal nature, dedicated to the resources and competencies development. Once the key processes was identified, the organization is apt to a comparative analysis at the level of processes, with the utilization of an 'architecture' of indicators, that should arrive at synthetic indicators of partial performance, regarding the resources (PiR), the processes (PiP) and outputs (PiO) with basis on the average performance of the indicators in each dimension. After that, the calculation of the overall organizational performance (OPi) is possible. It can be done by weighting the partial performances indexes, according the organization self-appraisal about its major forces of competitive advantage and calculating its average (see table 2). In the table 2 example, the Overall Performance Index (OPi) is, on average 0,8, which represents the current performance of the organization for three dimensions of competitiveness, resources and competencies, processes and outputs.

Table 2 - Example of calculation of performance indexes of the IC-dVAL (data from BOUNFOUR, 2003b)

Dimensions of competitiviness	Key items	Benchmarking position (gold-standard = 100)
Resources and competences	Investment in physical resources	90
	Investment in R&D and innovation	90
	Investment in human resources	85
	Level of finantial resources avaliable	80
	Quality of human resources avaliable	80
	Quality of the technology and knowledge held	80
	Average performance for Resources	**84,2**
Processes	Quatily of partnership networks	75
	Ability to combine intangible resources	70
	Processes and systems for building new knowledge	100
	Processes dedidated to human resources, education and motivation	90
	Average performance for Processes	**83,8**
Output and performance	Patent portfolio	60
	Brand names	50
	Quality of final products and services	80
	Market share	70
	Costs of products and services	85
	Barries to entry in the sector	95
	Average performance for Outputs	**73,3**
	Average performance rating	80,4
	Overall Performance Index (OPi)	**0,80**

Finally, to accomplish the fourth step, calculate the overall IC value for the whole organization, we have to consider the expectations for rent generation, with the basis on the fourth dimension, the intangible assets. Thus, first we have to estimate the value of the organization's intangible assets (IC value). To do that BOUNFOUR (2003b) recommends the use of any method available, such as the difference between the market value (for listed companies) or fair value (for other organizations) and the book value, the goodwill, the Tobin's *q*, etc. Subsequently, we have to weight the IC value with the Overall Performance Index (OPi), as a coefficient of efficiency, following the equation, dynamic value for IC = OPi x IC value.

So, in the example of the table 2, if we consider that the anticipated value for the organization's major intangible assets (IC value) is US$100 million, its dynamic value is in fact 0,8 x 100, or US$80 million. According BOUNFOUR (2003b), such dynamic value is "… a very powerful indicator for managing corporate performance" and "The 'combining function' appear therefore as an important tool for managing Intellectual Capital in the knowledge economy".

Yet according BOUNFOUR (2003a) the IC-dVAL could be used at different functional policy levels within the organizations and public policy dimensions, it has also already used in the assessment of the impact of European RTD programs. The analysis of the evolution of the dynamic value for IC could be a good point for the measurement of goodwill over time. “The whole approach has been implemented for dozens of companies and organizations at the European level: large companies, specific lines of activities within companies, as well as public organizations such as town councils” (BOUNFOUR, 2003a). At his book, BOUNFOUR (2003b) presents four cases of utilization of the IC-dVAL in different contexts, such as in a medium enterprise of the aerospace, defense and transport sectors; in a line of activity of a large software company; in the evaluation of a department of data processing of a large airline; and, in a non-profit case with a municipality and city hall in France.

3. RESEARCH DESIGN

As mentioned in the chapter 1, we designed the study in three main phases, concept definition, model development and model validation. During the concept definition phase, performed from our literature review (chapter 2), we reached a better understanding about concepts, definitions, assumptions, constraints, challenges and opportunities regarding the measurement and evaluation of the impacts generated for and by mega event projects. We also got some insights about how we could increase the likelihood of successful mega event projects, inducing value creation (positive legacies), competitiveness and local development with basis on the intangibles. It was out of the scope of the present research run an extensive literature review about such concepts. Previous studies, highlighted in the chapter 2, already did that. In fact, we intend to go beyond the simple description of the sources, making critical comparisons between the work of different authors looking for agreement and contradictions.

Based on the debate provided in the literature review (chapter 2) we built the foundations of a theoretical framework (figure 9). Such framework supports the identification of the findings we had to taken into consideration on the other phases, such as the success factors generated for and by the mega event projects to induce value creation (positive legacies), competitiveness and local development; what would be the managerially relevant intangible aspects; the interdependencies among them; what would be the variables that should be collected and taking into account; and the activities related to utilizing, improving and/or capitalizing the intangible assets and resources.

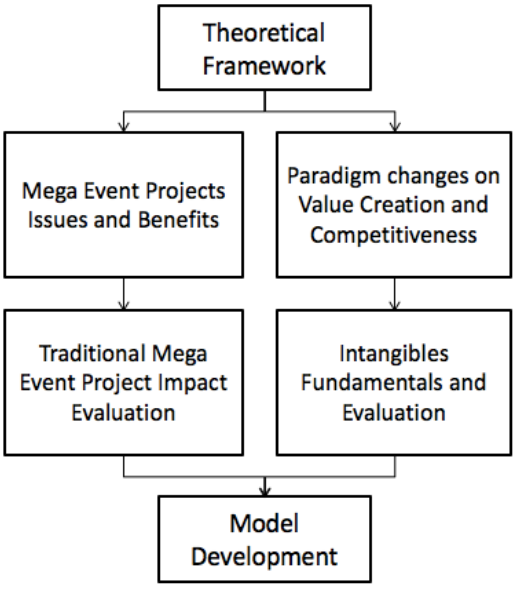


Figure 9 - Theoretical framework for model development

To perform the other two study phases, the model development and model validation, it seems to us a better option to apply a research design paradigm more pertinent to deal with real problems faced in the practice and research fields. We reach such a decision with basis on the study aim — to develop a performance model for measure and evaluate the mega event projects impacts, taking into account the intangible assets, with focus on induce value creation (positive legacies), competitiveness and local development — which has an interpretative, contextual and complex solution-drive demand. Although LACERDA et al. (2013) raise the fact that the most part of the management research is grounded on the notion that its goal is to describe, understand, explain and predict, and its main focus is to develop research that allow building or validating theories, we prefer to focus ourselves on an ability to solve a practical problem, as stated by our research question — How can we measure and evaluate the impacts generated for and by mega event projects, taking into account the intangible assets, with a focus on future value creation (positive legacies)?

Therefore, based on the research question and main objective abovementioned we opted to adopt a strategic and problem-solving approach to the present study and decided to apply the design science research (DSR) paradigm. The DSR is a research paradigm well accepted in engineering, computer sciences, information systems, and management (LACERDA et al., 2013; PEFFERS et al., 2007) to deal with such demands. In Engineering disciplines, for example, DSR is accept "… as a valid and valuable research methodology because the engineering research culture places explicit value on incrementally effective applicable problem solutions" (PEFFERS et al., 2007). The DSR is based on the design process, i.e. the act of creating an explicitly applicable solution, typically an artifact, to solve a problem in research or practice. This research orientation is concerned in solving relevant complex problem that taking into consideration the context in which their results will be applied (LACERDA et al., 2013). Consequently, it is aligned with our research question.

In an attempt to define the DSR, PEFFERS et al. (2007) argue that it is a rigorous process to design artifacts, such as constructs, models, methods, social innovations, new properties of technical, social, informational resources, and/or any designed object with an embedded solution, to address an observed problem, to make research contributions, to evaluate an existing design, and to communicate the results to appropriate audiences. Likewise, FRIEDMAN (2003) summarizes that most DSR definitions encompasses three attributes, generally referring to a process, goal-oriented and focusing on solving problems, or meeting needs, improving situations, creating something new or useful. LACERDA et al. (2013) also claim that the focus and objective of the DSR is to be a kind of research effectively directed to project artifacts that support

better solutions to existing problems. Then, “The development of the artifact should be a search process that draws from existing theories and knowledge to come up with a solution to a defined problem”, and the artifacts "…utility, quality and efficacy must be rigorously evaluated” (PEFFERS et al., 2007).

FEAST; MELLES (2010) conducted a literature review, analyzing a series of articles concerning the approach of different epistemological positions into design research studies. Using a framework developed by CROTTY (1998), they identified papers presenting the application of three epistemological models: Objectivism, constructionism and subjectivism. The authors argue that each model contains different assumptions about a given rationality of how to interpret the nature of the world and that these assumptions are embedded in particular methods. However, despite the “Crotty’s knowledge framework suggests clearly defined distinctions between the three epistemologies (…), it is important to note that each epistemology represents a spectrum of approaches rather than a homogenous class” (FEAST; MELLES, 2010).

According the objectivism model, the things carry intrinsic meaning within them as objects. So, a meaningful reality exists independently of the people’s mind and if we go about this objective truth in a right way, we can discover it. The constructionism sustains that the meaning is constructed through the people’s minds when it interacts with the world. This model implies that people in different cultures or eras construct meaning in different ways even in relation to the same given phenomenon. The subjectivism, in its turn, supports that the meaning is imposed by people’s minds without the contribution of the world, i.e. there is no truth or meaning independent of the mind. In summary, “Objectivist research distinguishes facts from people’s everyday meanings. Constructionist research places all meanings, scientific and non-scientific, on an equal basis; all are constructions and none is truly objective or generalizable. Subjectivist research concerns personal expression and its claims cannot form significant generalizations” (FEAST; MELLES, 2010).

However, other authors (MANSON, 2006; ROMME, 2003; VAN AKEN, 2004) make some distinctions between the Design Science and other philosophical and epistemological perspectives. MANSON (2006), compared the philosophical assumptions of DSR with the other two “traditional” research perspectives, the positivism and the constructivism and identified some differences. According to him, the positivism has as core beliefs the existence of only one reality, probabilistic and likely to be identifiable. The researcher should be impartial in the search for such objective truth, and the study strategy focuses on the quantitative observation of the phenomena. For the constructivism, there are multiple interpretations of the reality according to the social ties. The researcher interacts with the study participants to reach the knowledge and

values that will subjectively emerge, and the study strategy focuses on a qualitative approach based on the participation, and a hermeneutic and/or dialectic analysis. The DSR, in its turn, accepts multiple alternatives, context-situated in different real environments. The researcher generates knowledge from decisions taken around a construct objectively delimited within a certain context, and the reality's meaning is revealed by an iterative manner. In this case, the study strategy focuses on the process development, based on an analysis of the artifacts' impact measurement on the system as a whole.

In addition to a different epistemological position, the DSR also needs a new mental model and a formal methodology to permit someone recognize and evaluate its results and outcomes (PEFFERS et al., 2007). While the human sciences pursue to represent, understand and critically reflect on the experience of the people who take part in some organization system, and natural/social sciences purpose is understand phenomena, with basis on a consensual objectivity to discover general standards and intrinsic forces to explain such phenomena; the DSR, on the other hand, would be responsible for design and validate systems which do not yet exist by creating, recombining or changing products, process, software, systems and/or methods, to improve a given situation (LACERDA et al., 2013).

Traditionally in management and production engineering sciences, researchers and scholars' rationale seeks for the characteristics from the human and natural/social sciences. Thus, such new mental model should provide contexts in which the work done can be fully understood and evaluated, "Without one, it may be difficult for researchers to evaluate it or even to distinguish it from practice activities, such as consulting" (PEFFERS et al., 2007). So, in the DSR the context is pragmatic. It assumes that each situation is unique and based on ideal proposals and solutions, systems thinking, and limited information. The knowledge is in the service of the action and the nature of the thinking is normative and synthetic. This mental model is different from the natural/social sciences, in which the context is schematic and the nature of the thinking is descriptive and analytical, and from the human science, in which the context is constructivist and narrative, and the nature of the thinking is critical and reflexive (LACERDA et al., 2013; ROMME, 2003).

Regarding a methodology, it can be understood as the strategy that links the choice of particular methods to the desired outcomes (FEAST; MELLES, 2010) and one of its goals is to enhance the efficiency and effectiveness of design activities (DORST, 1997). One of the great challenges and primary concern throughout the design field is the balance needed between the practical relevance and the scientific rigor. On one hand its insights should be rigorous and well researched in the scientific tradition, but on the other

hand, they should also be applicable in practical design situations. According PEFFERS et al. (2007), the DSR methodology would include three elements, the conceptual principles to define what is meant by design science research, presented above; a process for carrying out and presenting the research, presented in the next paragraphs; and a set of practice rules, presented in the chapter 5.

With basis on a literature review about different processes to perform the DSR, LACERDA et al. (2013) compared them and organized the contributions in five steps. According the authors, the knowledge generally emerges in a flux composed by a) awareness, b) suggestion, c) development, d) evaluation, and e) conclusion. The awareness step is concerned with define the problem to be solved and its borders (external environment). The suggestion step is concerned with raising a set of potential alternatives, tracks and artifacts. In the development, the researcher may generate the artifact in its functional (operational) stage. Noteworthy that the DSR objective is not only to develop new artifacts and/or solutions, it can also be used to generate relevant and useful knowledge for troubleshooting, for improving existing systems and even for combining existing artifacts with focus on a new application (LACERDA et al., 2013). The evaluation step is concerned with the verification of the artifacts performance in dealing with the problem identified on the awareness step. And, finally, the conclusion step rest on the process formalization and communication to the stakeholders.

In the same way, PEFFERS et al. (2007) identified that "The design research literature contains a large number of references to processes that are described incidentally to the production of research-based designs." In engineering, computer science and information systems, there have been a number of design research efforts in which the focus has been on processes targeting the production of artifacts, human-centered design, and even addressing the problem from a functional view.

An example of the different propositions aimed to deal with the uncertainty and complexity of the current ever-changing environment on the management practitioner literature is the Design Thinking (DT) method. The DT is a human-centered emergent method of projecting and developing solutions to address complex issues (LOCKWOOD, 2010; PAVIE; CARTHY, 2015). Its goal is to create and offer practical solutions with the involvement of users, designers and business analysts in a holistic and comprehensive process. It involves five key principles, which are common throughout the process: observation, collaboration (co-creation), rapid prototyping (fast learning), visualization of ideas, and concurrent business analysis (LOCKWOOD, 2010).

The principle of observation seeks to understand the user perspective and to identify opportunities. This stage usually involves documentation and observational exploration to search inspiration, to get users insights and to discover unarticulated needs. The

second principle is based on collaboration between user and designer (or multidisciplinary design team) to generate added value ideas and immediate review of concepts. Such review of concepts should be carried out based on experimentation and prototyping of simple and incremental solutions, generating the third principle, the rapid and simple prototyping of potential solutions. The rapid prototyping, in turn, aims to accelerate the learning process, to reach an economy on the resources consumption and a better implementation of the final solution.

The fourth principle is the visualization of ideas. A visual explanation of concepts (for example, a conceptual framework or a mockup) provides a context for better understanding the development of the solution by the user and other stakeholders. The concurrent business analysis process integrated with the solution development, characterizes the fifth principle. Such analysis allows the alignment between the strategic and creative aspects during the idea generation (collaboration) process and not only later. This fact reduces potential limitations, allowing a better resources and activities understanding. Finally, the solution implementation has a high potential of be in better accordance with the competitive landscape.

The use and influence of the design thinking process has grown over the last years, on the practitioners and also on the scientific field. According PAVIE; CARTHY (2015), there are evidences demonstrating the design thinking as an effective tool to solve complex problems and that it has some benefits. It can represent a unique combination of scientific and technical rigor, provides an understanding of the user needs, a clear consideration for the economic demands of a given organization and also provides a basis for monitoring the environmental impact of a project. Some researches applied it in scientific studies concerning organizational strategy design and execution (HOLLOWAY, 2009), development of innovative products and services in banking and insurance sectors (PAVIE; CARTHY, 2015), patient experiences modulation in healthcare industry (UEHIRA; KAY, 2009), among others.

However, since the different design research efforts "…vary widely and are generally context specific, they cannot necessarily be directly applied to the development of a general process for design science research" (PEFFERS et al., 2007). So, with basis on an extensive literature review and using a consensus building approach, PEFFERS et al. (2007) proposed a DSR process that includes six activities (figure 10): problem identification and motivation, definition of the objectives for a solution, design and development, demonstration, evaluation, and communication. Since they used a consensus building approach in the design science, it is not a coincidence that these activities present similar concepts than the five steps presented by LACERDA et al. (2013) and the five key principles of DT presented by LOCKWOOD (2010).

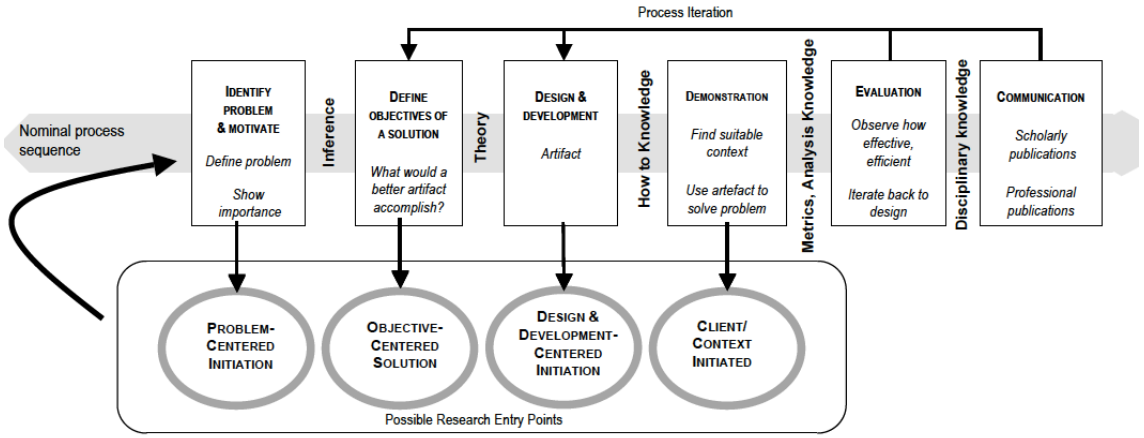


Figure 10 - The DSR process model (PEFFERS at al., 2007)

In the activity one, the problem identification and motivation, the researcher has to define the specific research problem and justify the importance of developing a solution. So, it may be useful break down the problem until its concept to try deal with its complexity and to improve the artifact development in the search of an effectively solution. This activity also helps to understand the reasoning associated with the researcher's understanding of the problem and provide motivation to pursue the solution for both the researcher and the audience. After the problem identified, in the activity two, the researcher may define the performance objectives for a solution. Starting from the problem definition and with the knowledge of what is desirable, feasible and viable in mind, he/she has to rationally infer the objectives of a solution in quantitative and/or qualitative terms.

In the third activity, the design and development, the researcher may create the artifact, e.g. any designed object (constructs, models, methods, etc.) in which a research contribution is embedded in the design, as well as, its architecture and functionality based in the theory borne by the solution. In activity four, demonstration, the researcher may demonstrate the use of the artifact to solve one or more instances of the specific research problem identified. It can be done by experimentation, simulation, case study, concept proof, or other appropriate activity.

The activity five, evaluation, involves comparing the objectives of the solution designed to the actual observed results from use of the artifact in the demonstration step. The researcher may observe and measure how well the artifact supports a solution to the problem. It can be accomplished by a comparison of the artifact's functionality with the solution objectives; by objective quantitative performance measures; by the results of satisfaction surveys, client feedback or simulations; by quantifiable measures of system performance, such as response time or availability; or could include any

appropriate empirical evidence or logical proof. Finally, in the activity six, communication, the researcher may disclose to other researchers, stakeholders and relevant audiences the problem and its importance, the artifact, its utility and effectiveness, and the rigor of the design.

Despite of the sequential order that the process was presented, PEFFERS et al. (2007) argue that there is no obligation to proceed such one. In fact, the authors recommend different entry points depend on the approach faced by the researcher (see the possible research entry points in figure 10). If the research is the result of an observation of a given problem or came from a suggested future research in a prior paper, he/she may start in the step one. If an industry or research demand can be addressed by developing an artifact to deal with it, the authors recommend starting by the step two. If an artifact already exists but it not yet been formally considered through a solution for a given problem domain in which it will be used, e.g. an artifact come from another research domain, or already been used to solve a different problem, or even appeared as an analogical idea, the researcher could start from the step three.

PEFFERS et al. (2007) demonstrated the use of their DSR methodology in four case studies in information science studies: On the design and development of a data warehousing solution to support data gathering and analysis for public health policy; on a software reuse; on the design of an application for Internet protocol (IP) environment that provides telephony and video functionalities; and on the development of a method, called critical success chains, for use in generating a portfolio of new ideas for mobile financial services applications. According their evaluation, the DSR methodology sucessful provided a nominal process for conducting DSR and a mental model for the characteristics of research outputs.

Hence, following the PEFFERS et al. (2007) DSR process model recommendations and to prevent the lack of a real-life event context and a well-defined objective to the impact analysis we took the decision of building a context from both the model development and model validation phases during a case study on the measurement and evaluation of the impacts on the intangible aspects, generated by and for the 2014 FIFA World Cup interventions in the Tourism industry at Rio de Janeiro region (Brazil). We did so to try guarantee the external validity and the strategic approach of the study. The case study seems to be the preferred strategy when how or why research questions are posed (YIN, 2003) and it is widely used in organizational, managerial studies and across the social sciences when the investigators are interested in understand complex social phenomena (KOHLBACHER, 2006; YIN, 2003).

For didactical reasons, the table 3 below links the study main phases to the intermediate objectives and the chosen methods. See the section 1.2 for further details

about the intermediate objectives, and the chapter 5 for details about the methods chosen, assumptions, and the procedural steps.

Table 3 - Link between the research design and the intermediate objectives

PHASE	METHOD	OBJECTIVES
Concept definition	Critical literature review	a. To identify and analyze the potential benefits, downsides and issues of mega projects, and the strengths and weaknesses of the prevailing frameworks for measure and evaluate the mega event projects impacts and legacies b. To introduce a reflection concerning the intellectual capital paradigm for value and performance evaluation in mega event projects, related to their strategic planning and management with focus on promoting positive impacts and legacies, and consequently, value/wealth creation
Model development	PEFFERS et al. (2007) DSR process model	c. To propose a conceptual framework and an operational model for measure and evaluate the mega event projects impacts taking into account the traditional structures of measurement and evaluation of the intangible assets
Model validation	Validation case study	d. To assess an operational version of the conceptual model for provide information for effective strategic management and decision-making in mega event projects with focus on increase the likelihood of successful projects, inducing value creation (legacies), competitiveness and local development

4. RESEARCH FIELD

As mentioned in the last chapter, the model development and model validation phases was performed during a case study on the measurement and evaluation of the impacts on the intangible aspects generated by and for the 2014 FIFA World Cup interventions, taking the tourism industry as research field. Hence, the current chapter intends to provide a brief description and some facts and figures about the tourism industry to give a better perspective to the reader about the research field where the study was conducted.

The tourism industry has become increasingly important due to its influence on the socioeconomic development of nations. This recognition is due to the dynamics of such industry as a major generator of employment, income, and public and private capital investment (FECOMERCIO, 2011). According the World Travel & Tourism Council (WTTC), the global authority on the economic and social contribution of Travel & Tourism, and The World Tourism Organization (UNWTO), the United Nations specialized agency mandated with the promotion of responsible, sustainable and universally accessible tourism, the tourism industry can make a huge impact on the world's economic and social development. It can be done by opening up the nations for business, trade and capital investment; by fostering the jobs creation and entrepreneurialism for the workforce; by the contribution to poverty alleviation, environmental protection, multicultural peace and understanding; and by the protection to heritage and cultural values.

In 2014, the number of international tourists' arrivals reaches a total of 1,135 billion overnight visitors. A new record of travelers and part of a consistent growth since the global economic crisis of 2008, as shown in figure 11. The Americas (+8%), Asian & the Pacific, and the Middle East (+5%) registered the strongest growth, while Europe (+3%) and Africa (+2%) grew at a slightly more modest pace. The Europe last as the most visited region, receiving 51% of the visitors (about 584 million), followed by Asian & the Pacific with 23% (about 263 million), the Americas with 16% (about 182 million) and finally by Africa and the Middle East with 5% (about 56 million) and 4% (about 50 million), respectively (UNWTO, 2015).

The receipts from the international tourism followed the number of visitors, increasing 3,7% in real terms from 2013, and was estimated in US$1,245 trillion. The distribution of the international tourism receipts followed the arrivals, but with a minor concentration in the Europe region. The Europe respond by 43% of the receipts (about US$509 billion), the Asian & the Pacific by 30% (about US$377 billion), the Americas by 20% (about

US$274 billion), the Middle East by 4% (about US$49 billion) and finally Africa by 3% (about US$36 billion), according the UNWTO (2015).

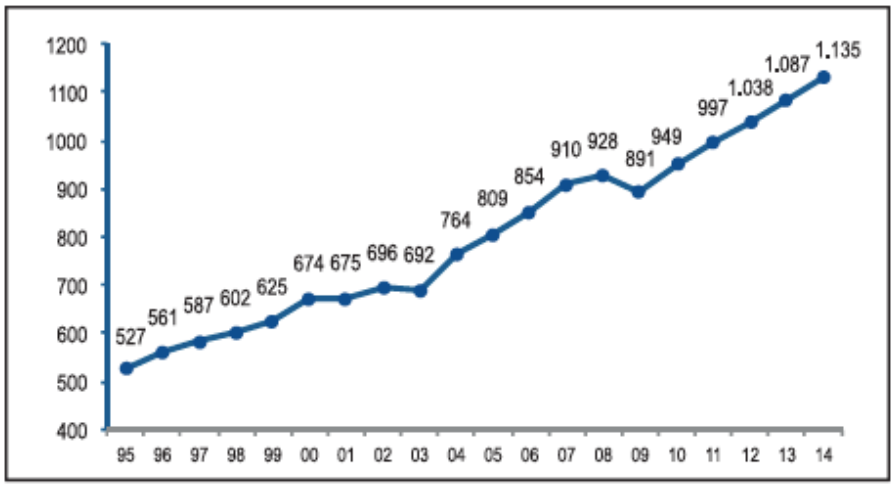


Figure 11 - Global international tourist arrivals (inbound tourism), in million (UNWTO, 2015)

The WTTC 2015 World Annual Economic Report (WTTC, 2015b) presents that the direct contribution from the tourism industry for the global economy in 2014 generated US$2,365 trillion (3,1% of total GDP) and supported 105,408 million jobs (3,6% of total employment). The money spent by foreign visitors to a country, known as visitor exports, was estimated in US$1,383 trillion (5,7% of total exports) and the capital investment attraction was estimated in US$814,4 billion (4,3% of total investment). The total contribution of the travel and tourism activities to the global GDP was estimated in US$7,580 trillion (9,8% of GDP), and to the employment was estimated in 276,845 million jobs (1 in 11 jobs or 9,4% of total employment).

According the WTTC methodology, the direct contribution reflects the spending made by residents and non-residents for business and leisure purposes on tourism-characteristic sectors such as hotels, airlines, airports, travel agents and leisure / recreation services that deal directly with tourists, as well as the government spending on services directly linked to visitors, such as cultural or recreational services (museums, national parks, etc.) and their jobs. The total contribution includes not only the direct contribution, but also the indirect and induced contributions on the economy. It are produced by the tourism industry investment spending (such as the purchase of new aircraft and construction of new hotels), the government spending (such as tourism marketing and promotion, aviation, administration, security services, resort area security services, resort area sanitation services, etc.), the suppliers' purchases (domestic purchases of goods and services by the sectors dealing directly with tourists) and the

spending of direct and indirect sectors employees, those who are directly or indirectly employed by the travel and tourism (T&T) sector, as presented in figure 12.

Figure 12 - The different contributions from the tourism industry for the economy (WTTC, 2015b)

There are different ways to analyze the components of the tourism spending. The most usual characterization is the division between leisure and business travels and between domestic travel and foreign visitor (the visitor exports) spending. Yet in 2014, the leisure travel spending (inbound and domestic) responded by 76,6% of direct tourism GDP (US$3,850 trillion) and the business travel spending by 23,4% (US$1,175 trillion). Regarding the comparison between domestic travel spending and foreign visitor spending or international tourism receipts, 72,5% of direct tourism GDP was generated by the former, compared with 27,5% for the latter (WTTC, 2015b).

In the Americas, even with the growth of 8% in terms of arrivals, reaching the total of 182 million visitors, the receipts were up only by 3%, to US$274 billion. The growth in terms of arrivals was driven by North America (+9%), and the Caribbean (+7%). Arrivals to Central and South America grew at double the rate recorded in 2013, respectively +6% and +5%, and well above the world average. The receipts growth increased 8% in Central America, 7% in the Caribbean, 6% in South America and 2% in North America (UNWTO, 2015).

Particularly in Brazil, data from the WTTC (2015a) support that, in 2014, the direct contribution from the tourism industry was estimated in US$77,4 billion (R$182,1 billion, 3,5% of GDP), and the total contribution, including the direct, indirect and induced contributions, was estimated in US$209,2 billion (R$492,4 billion, 9,6% of GDP).

Regarding the employment rates, the tourism industry directly supported 3,140 million jobs (3,1% of total employment) and the total contribution, including the jobs indirectly supported by the industry, was estimated in 8,829 million jobs (8,8% of total employment). The visitor exports, the money spent by foreign visitors to the country, was estimated in US$7,2 billion (R$17,1 billion, 2,7% of total exports) and the capital investment attraction was estimated in US$25,3 billion (R$59,6 billion, 6,8% of total investment).

In relative terms, the contributions from the tourism industry for the Brazilian economy were aligned with the global economy regarding the direct contribution to the GDP (3,5% vs 3,1%, respectively), the total contribution to the GDP (9,6% vs 9,8%), the direct contribution to employment (3,1% vs 3,6%) and the total contribution to employment (8,8% vs 9,4%). However, the visitor exports in Brazil was lower than globally (2,7% vs 5,7% of total exports) and the capital investment attraction was greater (6,8% vs 4,3% of total investment). The leisure travel spending (inbound and domestic) responded by 85,8% of direct tourism GDP (76,6% globally), generating US$117,9 billion (R$277,7 billion) and the business travel spending responded by 14,2% (23,4% globally), estimated in US$19,5 billion (R$45,9 billion). Regarding the comparison between domestic travel spending and foreign visitor spending, 94,7% of the direct tourism GDP was generated by the domestic, compared with 5,3% for the foreigners. Globally, these number were estimated in 72,5% and 27,5%, respectively (WTTC, 2015a;2015b).

The growth rates of the tourism industry showed a positive evolution between 2012 and 2014 both on the global and Brazilian economies. Globally, we can see a constant rate growth movement between these years, in all indicators. In Brazil, despite the hosting of the FIFA World Cup in 2014, the growth rates show an overall decrease, excepting for the Capital investment (table 4).

Table 4 - Tourism industry growth rates comparison, global vs Brazilian economy (data from WTTC, 2015a; 2015b)

Growth (%)	World			Brazil		
	2012	2013	2014	2012	2013	2014
Direct contribution						
1. Visitor exports	4,1	4,4	4,1	12,2	4,3	7,5
2. Domestic expenditure (includes government individual spending)	3,3	2,9	3,1	6,7	3,7	2,3
3. Internal tourism consumption (1 + 2)	**3,5**	**3,3**	**3,4**	**7,0**	**3,7**	**2,6**

4. Purchases by tourism providers, including imported goods (supply chain)	3,4	3,2	3,3	7,2	4,0	2,3
5. Direct contribution of tourism to GDP (3 + 4)	**3,7**	**3,4**	**3,5**	**6,8**	**3,5**	**2,8**
Indirect and induced contribution						
6. Domestic supply chain	3,8	3,5	3,7	6,8	3,5	2,8
7. Capital investment	3,7	2,2	3,9	-0,1	9,3	9,2
8. Government collective spending	2,3	2,2	2,4	4,3	5,9	2,0
9. Imported goods from indirect spending	4,8	2,8	3,5	7,7	3,8	2,3
10. Induced	3,1	3,5	3,8	3,9	3,7	3,8
11. Total contribution of tourism to GDP (5 + 6 + 7 + 8 + 9 + 10)	**3,5**	**3,3**	**3,6**	**4,8**	**4,4**	**3,8**
Employment contribution						
12. Direct contribution of tourism to employment	1,9	1,8	2,0	8,5	2,6	3,6
13. Total contribution of tourism to employment	2,0	2,1	2,3	6,1	3,2	4,2

As we can realize with basis on the mentioned figures, the contribution of the tourism to the international trade is very important. International tourism accounts for about 30% of the world's exports of services and almost 6% of total exports. Such contribution is similar for both developed and emerging economies and, as an export category, it ranks the tourism fourth position worldwide, after fuels, chemicals and food. Visitors from emerging economies represented in 2014 a 46% share of the international arrivals (up from 38% in 2000), proving growth and increased opportunities for travel from those in these new markets (UNWTO, 2015; WTTC, 2015b).

Thus, the investment in the tourism industry has been recognized as a valuable driver for economic growth, development and employment. "In contrast to the moderate and uneven expansion of the global economy, international tourism has progressively grown above expectations over recent years" (UNWTO, 2015). Among others policies to develop the tourism industry worldwide, one that is in the spotlight is the hosting of mega event projects. As already mentioned in the section 2.1.3, the application process to host mega event projects is becoming increasingly popular in last decades, mainly due to the potential impacts of these events as trigger for local economic development (CLARK,

2008; PREUSS, 2007). Mega event projects have a direct impact on tourism industry, affecting a range of factors that include investment, employment generation, infrastructure development, accommodation, transport facilities and destination branding (KASIMATI, 2003; UNWTO, 2015).

Indeed, the tourism relating impacts are the most propagated potential benefits from the mega event projects. The intensification of the competition among nations to became a destination hub and attract visitors and external capital flow raise the need to make enjoyable cities to citizens, tourists and investors, and to spread the benefits to the surrounding region trying to multiply its impact (UNWTO, 2015). And the mega event projects can act as a catalyst to join public and private efforts with such objectives.

Such importance was also identified in the scientific field. To help seize such an opportunity, BOUKAS et al. (2013) proposed a framework for leveraging the post-Olympic Games tourism, using the heritage and cultural assets of 2004 Athens Olympics as case study. The study agree with the findings presented in our literature review (section 2.1.3) regarding the need of an effective strategic mega event project planning and management, in order to maximize the positive impacts and legacies. They explored the cross-leveraging synergies between the mega event project legacies and cultural aspects to boost the tourism in the host city. The legacies can be exploited as a platform for future tourism development if local policies are successful to 're-territorialise' the temporary effects on tourism into long-lasting impacts, offering to the tourists and local habitants a variety of experiences and activities. To reach this target, BOUKAS et al. (2013) argued that a strategic planning is required for creating and leveraging long term impacts in order to maximize the sustainable outcomes.

The framework proposed is composed by two grounding strategies. The first is to utilize the Olympic venues for organizing events and activities to take advantage of the structures build and the associated prestige embodied in the collective memory. The second is to use the Olympic legacy and heritage themes in media, as advertising and promotion actions, to reinforce destination images. Based on these grounding strategies, there are a number of derivative strategies that can be implemented to enrich an Olympic host city's tourism product, such as the design of Olympic-related attractions (e.g., thematic parks, Olympic museum, etc.), the development of a sport and cultural events portfolio, the package of sport and cultural attractions, and the attraction of conferences, exhibitions, concerts, etc. in the Olympic venues (figure 13).

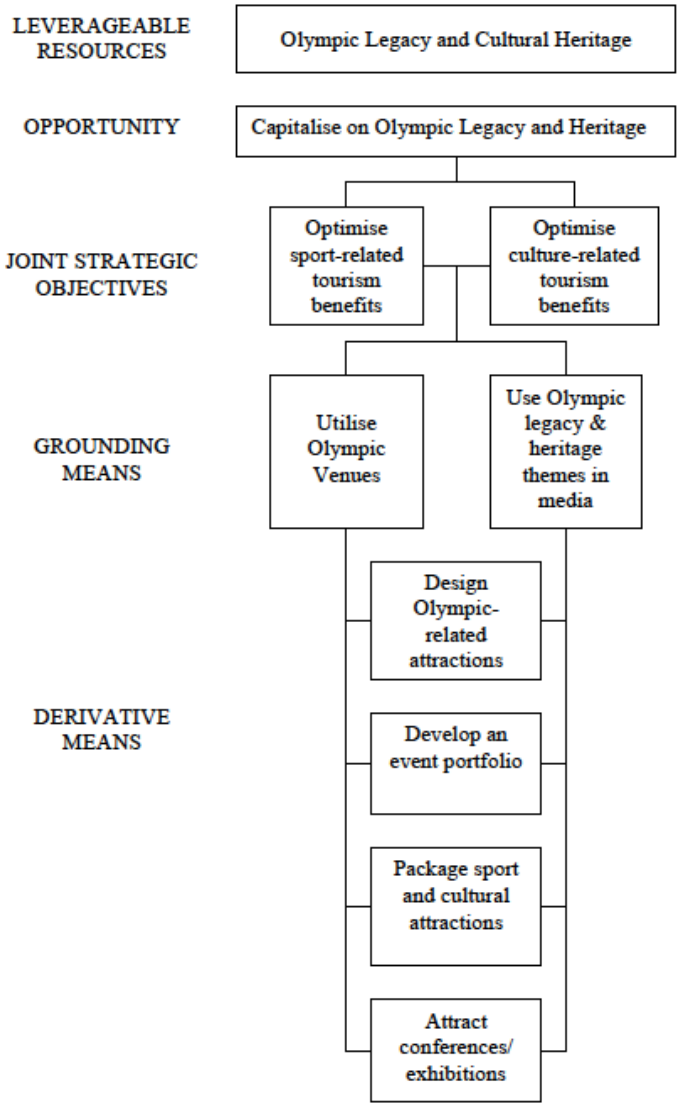


Figure 13 - BOUKAS et al. (2013) strategic planning framework for leveraging post-Olympic Games tourism

5. RESEARCH METHODS

The current chapter presents the assumptions, considerations, choices, methods and procedures regarding the last two phases of our research design, the model development and the model validation, in order to verify our third and last hypothesis. We previously assumed that it is possible to develop an operational method to measure and evaluate the mega event projects impacts with basis on the intangible aspects. According our literature review, some researchers have developed advanced methods for measuring intangible assets. Regarding specifically the mega event projects, PREUSS (2007); (2015) took the first step proposing a conceptual model for the identification of the mega events projects impacts and legacies taking into consideration the intangibles. However, the existence of valid operational methods ready to use to measure and evaluate the mega event projects impacts and legacies, taking into account the intangible assets is still unclear.

There are some challenges regarding the performance measurement of programs, projects and interventions impacts in an overall manner. An important consideration is the fact that the performance measurement is not an end in itself (BEHN, 2003). Thus, provide large, comprehensive and reliable reports concerning project impacts without a clear idea about how to use them are of little use to managers, decision-makers and other stakeholders involved. Measuring performance on projects has different purposes that require different methods, involving different measures and concepts. Focusing on the public sector managerial issues, BEHN (2003) proposes that public managers has eight specific managerial purposes as part of their overall management strategy to improve the performance of a given intervention: evaluate, control, budget, motivate, promote, celebrate, learn, and improve (the last being the core purpose behind the other seven). For each purpose different questions have to be assessed and different measures have to be deployed, “Unfortunately, no single performance measure is appropriate for all eight purposes" (BEHN, 2003).

Other important consideration is the difference between monitoring and evaluating performance. The objective of evaluation is to raise evidence about what is working and what isn’t, what is improving and what is worsening, i.e., it is concerned with tracing causes to outcomes or impacts and how much progress is being made toward the defined (or expected) goals (BEHN, 2003; EZEMENARI; RUDQVIST; SUBBARAO, 1999). Monitoring performance, otherwise ”…is concerned with tracking the progress of implementation and processes (especially inputs and outputs) to ensure that agreed targets are met” (EZEMENARI et al., 1999). BOUNFOUR (2003b) also provides an interesting contribution in this issue differentiating measurement and evaluation.

According to him, measurement is a way of registering transactions regarding specific items, whereas evaluation is an appreciation of the value of such item.

Therefore, the basic principle to run an impact evaluation should be assess to which extend a given project, or intervention, has caused the expected changes in the value envisioned by the stakeholders. To do that, EZEMENARI et al. (1999) proposed three critical steps: a) defining the expected outcomes, b) setting performance standards and indicators, and c) defining a counterfactual. Important to note that there is an 'usual admonition' concerning the performance measurement stating that you shouldn't measure inputs, processes or outputs, you should measure outcomes. However, outcomes are not necessarily the best measure for all purposes (BEHN, 2003).

Our last consideration has liaison with the already known challenges regarding the measurement of impacts and legacies in mega sports event projects. PREUSS (2007) summarized the three main obstacles. According to him, the difficulty resides in measuring the 'net' legacy rather than 'gross' one; in measuring the legacy over time; and in judging whether a particular legacy has positive or negative value (see section 2.1.4 for further details). These issues "... does not affect the measurement of a legacy itself, but is concerned with a judgment of its value". To deal with this main obstacles, PREUSS (2007) recommends that the impacts and legacies evaluation should be performed based on its value "… for a defined period of time under a given welfare function", as well as based on a quantitative and qualitative analysis considering all tangible and intangible costs and benefits.

As discussed in the chapter 3, we chose to follow an emerging method to solve problems and develop innovative solutions, the PEFFERS et al. (2007) Design Science Research (DSR) process (see figure 10), for performing the modeling and evaluation phases. Three main reasons led us to took this decision: a) the interpretative, contextual and complex solution-drive demand generated by the study research question and main objective, b) because it seemed to us a better option to apply a research design paradigm more pertinent to deal with real problems faced in the practice and research fields, and c) to avoid reducing the external validity because of a limited applicability of the artifact to be developed. "If a model is so complex that the researcher cannot manipulate it, the model loses its usefulness in the search of the solution" (CAUCHICK MIGUEL et al., 2010).

The PEFFERS et al. (2007) DSR process describes a set of six steps that have to be made for developing and testing the utility, quality and efficacy of an artifact: a) problem identification and motivation, b) definition of the objectives for a solution, c) design and development, d) demonstration, e) evaluation, and f) communication. In a broadly view, the Design Science process consists of a single cycle of construction and

evaluation (figure 10). The construction is the process of production of a given artifact for a specific purpose, whereas the evaluation is the performance evaluation of the same artifact as a desired solution (LACERDA et al., 2013). However, as mentioned in the section 1.2 and detailed in the chapter 3, we organized our methodological approach in three main phases, concept definition, model development and model validation.

Therefore, in the current study we will present the DSR process cycle divided in two parts, only for didactical reasons and for respect the differentiation between the intermediate objectives of the model development and model validation phases (table 3). The procedures applied to run the three first steps of the PEFFERS et al. (2007) DSR process, related to the artifact construction: a) problem identification and motivation, b) definition of the objectives for a solution, and c) design and development were included on the model development phase, and are described in the section 5.1. The procedures applied to run the three last steps, related to the artifact evaluation: d) demonstration, e) evaluation, and f) communication were included on the model validation phase, and are described in the section 5.2.

5.1. Model development

The model development phase has as aim to propose a conceptual framework and an operational model for measure and evaluate the mega event projects impacts, taking into account the traditional structures of measurement and evaluation of the intangible assets. Therefore, following our DSR process cycle, we started the first step, the problem identification, defining a specific case study problem and setting the limits of its borders.

With basis on the abovementioned considerations and challenges regarding the performance evaluation of programs, projects and interventions impacts, and to prevent the lack of a real-life event context, to provide real engagement and a well-defined nature of the welfare outcomes and objectives to the impact analysis, we decided to develop our artifact in a case study encompassing the measurement and evaluation of the impacts of the 2014 FIFA World Cup interventions in the tourism_industry at Rio de Janeiro city (Brazil). According KOHLBACHER (2006) and YIN (2003), the case study seems to be the preferred strategy when a how or why research questions are posed, and is widely used in organizational and managerial studies when the investigators are interested in understand complex social phenomena.

The procedure we adopted to understand the ecosystem (external environment) for the solution and to define the specific border limits of the research problem was performing a documental analysis and a preliminary semi-structured interview with the mega event project managers and decision-makers. The documental analysis had as

aim to identify the strategic vision of the event and to collect information regarding the planning and management of impacts and legacies from the 2014 FIFA World Cup project. The data analyzed were collected at the websites of the Brazilian Ministry of Tourism (http://www.turismo.gov.br/), Brazilian Government Portal (http://www.brasil.gov.br/), Word Cup Portal (http://www.copa2014.gov.br/en), Federal Government Transparency Portal (http://www.transparencia.gov.br/copa2014/home), Transparency Portal of the Chamber of Deputies and Federal Senate (http://www.copatransparente.gov.br/homecopa) and Rio de Janeiro City Hall Portal (http://www.rio.rj.gov.br/home).

In the preliminary interviews we pursued to validate some points concerning the strategic aspects for the event, to gather additional information about challenges, potential risks, opportunities, and gaps regarding the planning and management of the interventions impacts, as well as to understand the relevance and viability of its impacts and legacies. The preliminary interviews were conducted with two representatives of the government bodies involved within the project. One from the Rio de Janeiro State Government Project Management Office (PMO) and other from the Tourism Department of the Rio de Janeiro City Office. During the interviews they also provided additional documents for our documental analysis. As results of this step, we intend to describe the reasoning associated with our understanding of the problem, the motivation factors to pursue the solution, as well as the opportunities and unarticulated needs discovered. Noteworthy that we also made contacts with representatives from the Federal Government (Ministry of Tourism and Ministry of Sports), but it was not possible get their interviews.

After the identification of the specific case study problem and aware about the opportunities and unarticulated needs, we proceed to the step two, defining the performance objectives for the solution. We accomplished this step by carrying out a qualitative analysis to rationally infer the objectives of a solution regarding three main factors: desirability, feasibility and viability. The desirability factor is concerned with meet the unarticulated needs identified in the last step, and to compare the expected impacts and legacies from different groups of stakeholders with the interventions inputs and with the final perceptions of the effects of these interventions. This is particularly important because it can permit us to infer about the perceived value-creation performance generated by the 2014 FIFA World Cup in the tourism industry, i.e. the value in context of the mega event project (PREUSS, 2015). To deal with the feasibility factor, we analyzed the potential alternatives for a solution development and present the requirements of the solution with basis on the findings from literature review chapter. Finally, the selection criteria chosen for setting the performance standards and indicators

took into consideration the assumptions of the main approaches to deal with the intangibles and the traditional structures of measurement and evaluation of the intangible assets, to guarantee the artifact viability.

Once the performance objectives and standards defined, we proceed to the third step, the design and development of the artifact. In this step, the researcher may create any designed object (construct, model, method, system, etc.) in which a research contribution is embedded in the design. Thus, taking into consideration the theory discussed in the literature review chapter, the awareness about the case study problem, opportunities and unarticulated needs, and the performance objective for the solution, we present the process of development of an artifact (a conceptual framework and an operational model) for measure and evaluate the impacts of the 2014 FIFA World Cup interventions in the tourism industry, taking into account the traditional structures of measurement and evaluation of the intangible assets. In this step, we also detail the final model architecture, functionalities, performance standards, indicators, measure outcomes and practice rules. Following the MILLER, V. A. et al. (2009) and NIELSEN (2014) propositions regarding the development of artifacts and constructs, and the use of indicators to measure them, we present what construct the model will measure and how, and describe the properties of the resulting measures in terms of how the parts of the construct interrelate.

In summary, we started the model development phase by identify the specific context, problem and opportunities about the 2014 FIFA World Cup tourism intervention impacts to define the approach to deal with the intangibles. After that, we designed the conceptual framework, identifying what would be the managerially relevant intangible capitals dimension, the interdependencies between them and the intangible success factors (assets, resources and competencies) generated for and by the mega event project important to account for. Lastly, to design the operational model, we defined what variables should be collected, how to collect and treated them, to finally decide what would be the artifact outcomes.

5.2. Model validation

During the model validation phase, we present the results collected from the artifact usage (on the 2014 FIFA World Cup tourism interventions case study) and cross them with the mega event projects challenges, issues, contexts, opportunities and unarticulated needs (collected from the literature review and preceding steps of our DSR process cycle) to evaluate the implications for action that the artifact outcomes and results entail. The aim of this phase is to raise evidence about the validity of the proposed

artifact's operational version for provide information for effective strategic management and decision-making with focus on increase the likelihood of successful projects by inducing value creation (positive legacies), competitiveness and local development.

Consequently, in the fourth step of our DSR process cycle, demonstration, we present the use of the artifact to solve the research problem identified in the step one. The option for carry out the demonstration step in a case study was based on the recommendations of BEHN (2003) and EZEMENARI et al. (1999) to prevent the lack of a real-life event context and to provide real engagement to the impact analysis. This strategy seems to be well suited, since PEFFERS et al. (2007) pointed out the case study as an appropriate activity option to demonstrate the results of the use of the artifacts developed by the DSR.

We demonstrate the use of the artifact in measuring and evaluating the expectations and perceptions of seven institutional stakeholders and two mega sport events specialists. They were divided into two groups of analysis. The group from the internal stakeholders was composed by members that played the role of project decision-makers, managers, operators and/or direct participants on the mega event project interventions. The group from the external stakeholders was composed by members of institutional bodies indirectly affected by the interventions, such as development agencies, professional associations, and mega sport events specialists. The demonstration procedure follows the presentation of a) the stakeholders, b) the contact with the stakeholders, c) the interview, d) the data collection and treatment, and e) the data results.

Since it was not possible to establish controls groups concerning the involved stakeholders with and without the 2014 FIFA World Cup interventions, at the same point in time, we assessed the counterfactual factor adopting a non-experimental design with generic, or shadow, control group (EZEMENARI et al., 1999). We did so to take into account the intervening factors and/or contemporaneous events, and to compensate the lack of a baseline measure and randomization. Therefore, the judgment of these two groups is compared in regard of their expectations and perceptions measured by the artifact outcomes, using a descriptive and inferential statistic approach (Student's t Test, with a level of significance of $p<0,05$).

During the fifth step of our DSR process cycle, evaluation, we compared the objectives of the solution designed with the collected results from the artifact usage. In the current evaluation step, we are concerned with the verification of the artifact performance in dealing with the problem identified on the identification and awareness step (the PEFFERS DSR step one), i.e., if the artifact supports a solution for the problem identified or not. To perform such evaluation we followed the MESSICK (1995) unified

concept of validity, which can be understood as "…an overall evaluative judgment of the degree to which empirical evidence and theoretical rationales support the **adequacy** and **appropriateness** of **interpretations** and **actions** based on test scores or other modes of assessment" (author emphasis).

According the MESSICK (1995) rationale, the validation is a continuing process. Therefore, it will be provided a discussion to raise initial evidences concerning the power of the artifact developed for measure and evaluate the mega event projects impacts, taking into account the intangible assets and resources, to provide information for effective strategic management and decision-making in mega event projects.

The validity process has both a scientific and political role, so MESSICK (1995) argues that it can't "…be fulfilled by a simple correlation coefficient between test scores and a purported criterion (i.e., classical criterion-related validity) or by expert judgments that test content is relevant to the proposed test use (i.e., traditional content validity)." It should be conducted otherwise as an empirical and/or theoretical evaluation of the meaning and implications of measurement. It is the interpretations of the test scores that are evaluated, not the test itself (AERA, 1999).

The unified theory of the validity addresses six aspects that can be used as general criteria or standards to verify measurement validity: Content, Substantive, Structural, Generalizability, External and Consequential aspects. Such six aspects are emphasized because most score-based interpretations and action inferences raise these properties or assume them (MESSICK, 1995).

The content aspect is concerned about the boundaries and structure of the construct to be assessed, and includes evidence of content relevance, representativeness, and technical quality. This aspect intends to assess if the test items appear to be measuring the construct of interest. The substantive aspect emphasizes the role of the substantive theories and the modeling process in identifying the domain to be evaluated and the response consistencies. It also concerns the engagement process, "The comprehensiveness and fidelity of simulating the construct's realistic engagement…" (MESSICK, 1995). Then, the substantive aspect aims to assess if the underlying theoretical foundation embraces the construct of interest.

The structural aspect are concerned with the fidelity between the score structure and the construct domain structure. The intention here is assess if the dimensions measured by the test correlates with the construct and test scores. The generalizability aspect focus on the extent to which score properties and interpretations generalize to and across different groups, settings and tasks. "Indeed, setting the boundaries of score meaning is precisely what generalizability evidence is meant to address" (MESSICK, 1995).

The external aspect is concerned with the evidences about convergent, discriminant, and predictive qualities. "…the constructs represented in the assessment should rationally account for the external pattern of correlations" (MESSICK, 1995). The consequential aspect involves the implications of score interpretation as a basis for action and the potential consequences of test use. This aspect try to identify what are the potential risks if the scores are invalid or inappropriately interpreted and what are the trade-offs of its application. For example, "…low scores should not occur because the assessment is missing something relevant to the focal construct…" (MESSICK, 1995).

"Evidence pertinent to all of these aspects needs to be integrated into an overall validity judgment to sustain score inferences and their action implications, or else provide compelling reasons why not, which is what is meant by validity as a unified concept" (MESSICK, 1995). Therefore, the model adequacy (or objectivity) was evaluated taking into consideration the employment of the performance model to measure and evaluate the mega event projects impacts and legacies, taking into account the intangible assets and resources. The model appropriateness (or relevance) was assessed taking into consideration the purpose of the instrument to provide information for effective strategic management and decision-making in mega event projects legacies, increasing the likelihood of successful projects, contributing for inducing value creation (positive legacies), competitiveness and local development.

Finally, we assumed as the step six, communication, the disclosure of the documents produced during the model development and evaluation phases, its importance, and the impact we perceived regarding to other researchers, stakeholders and relevant audiences interested in our research question. In summary, in our model validation phase, to empirically evaluate the validity of the artifact, we present the collected data and cross them with the mega event projects challenges and issues (chapter 2) in a validation case study. During this phase we were concerned to verify the model validity around two points of analysis. First, the model objectivity for providing information to decision-making and effective strategic management of mega event projects impacts; and latter, the model relevance for increasing the likelihood of successful projects, contributing for inducing value creation (positive legacies), competitiveness and local development.

6. RESULTS AND DISCUSSION

The current chapter presents the results of the model development and model validation phases and provides a discussion of such results regarding the outcomes of each phase, respectively, the development of the theoretical framework and the operational model (for the model development phase), and the utility, quality and efficacy of the operational model (for the model validation phase). For one side, the theoretical framework and the operational model gathered the findings we had to take into consideration, such as the success factors generated for and by the mega event projects to induce value creation (positive legacies), competitiveness and local development; the managerially relevant intangible aspects; the interdependencies among them; the variables that should be collected and taking into account; the activities related to utilizing, improving and/or capitalizing the intangible assets and resources. On the other hand, the evaluation process enabled us to raise some evidences about the operational model as a desired solution.

As mentioned in the chapter 5, we divided the artifact design cycle into two parts. We did it for didactical reasons and for respect the differentiation between the intermediate objectives of our research design (see table 3). Therefore, the results and discussion are presented also respecting the same delineation. The three first steps of the PEFFERS DSR process related to the artifact construction, a) problem identification and motivation, b) definition of the objectives for a solution, and c) design and development are detailed on the model development section (6.1). The last three steps related to the artifact evaluation, d) demonstration, e) evaluation, and f) communication are detailed on the model validation section (6.2).

6.1. Model Development

The model development phase, as already mentioned, has as aim to propose a conceptual framework and an operational model for measure and evaluate the mega event projects impacts, taking into account the traditional structures of measurement and evaluation of the intangible assets. Following the DSR process cycle proposed by PEFFERS et al. (2007), the researcher has to define the specific research problem and justify the importance of developing a solution as the first step (problem identification and motivation). This step also helps to understand the reasoning associated with the researcher's understanding of the problem and provide motivation to pursue the solution for both the researcher and the audience.

As presented in the section 5.1, the procedure we adopted to understand the ecosystem (external environment) for the solution, set its borders and define the specific research problem was performing a documental analysis and a preliminary semi-structured interview with the mega event project managers and decision-makers. The analysis had as aim to identify the strategic vision of the event and to collect information regarding the planning and management of impacts and legacies from the 2014 FIFA World Cup project. In the interviews, we pursued to validate some points concerning the strategic aspects for the event, to gather additional information about challenges, potential risks, opportunities, and gaps of the planning and management of the project, as well as to understand the relevance and viability of its impacts and legacies.

The documental analysis also allowed us gathering information to design a stakeholder-mapping matrix. With this matrix was possible to identify the different stakeholders involved, its role (decision-maker, management staff, directly influenced and indirectly influenced) and the different effects on the social environment. We used this matrix as an orientation map to identify the possible stakeholders to be enrolled in both interviews we proceeded, the preliminary one in the problem identification and motivation step, described below, and the validation interview with the operational version of our model, in the demonstration step, presented in the section 6.2.

The data analyzed were collected at the websites of the Brazilian Ministry of Tourism, Brazilian Government Portal, Word Cup Portal, Federal Government Transparency Portal, Transparency Portal of the Chamber of Deputies and Federal Senate, and Rio de Janeiro City Hall Portal. The preliminary interviews were conducted with two members of the government bodies directed involved within the project. One from the Rio de Janeiro State Government Project Management Office (PMO) and other from the Tourism Department of the Rio de Janeiro City Office. They also provided additional documents for our documental analysis.

According the information gathered, the 2014 FIFA World Cup had a potential strong media appeal and a significant capacity of country image projection in the international tourism market (MINISTÉRIO_DO_TURISMO, 2013). The strategic vision of the Brazilian Government for the 2014 FIFA World Cup aimed that the legacy of the World Cup should go beyond the promotion of the national tourist attractions, also providing improvements in infrastructure and tourist services quality, as well as contributing with employment and income generation within the implicated sectors.

To reach these potential benefits from the 2014 FIFA World Cup project, the Brazilian Government built an Intervention Plan to the Tourism industry presenting three strategic objectives: a) the tourist reception with quality and attention; b) the promotion of a Brazil's good image abroad; and c) the transformation of the achievements in positive legacy for

the country (MINISTÉRIO_DO_ESPORTE, 2012a). Such objectives would be pursued by the implementation of a series of intervention initiatives following a logical tourist's journey. This journey begins with the tourist arrival at the entrance points (airports, borders, seaports and bus stations), passing through the vast service sector infrastructure (hotels, bars/restaurants, commercial centers and places, car rental companies, collective transport, taxis, etc.) and tourist attractions, and ends at the competition sport venues (stadiums and arenas), public exhibition and other cultural activities places (Fan fests).

The intervention plan was unfolded in five major lines of action: a) Tourist Infrastructure; b) Services qualification; c) Country promotion; d) Information and tourist support; and e) Accommodation capacity. Each line of action unfolds, in turn, a series of sub-axes, with specific actions, as described below:

A. Tourist Infrastructure:

A.1. Facilities implementation. Building, implementation, renovation, expansion and/or adaptation of Tourist Information Centers (CATs) at entrance points and strategic high tourist flow sites;

A.2. Touristic and urban sign ('brown sign') implementation (or complementation) at the host city main access, routes and tourist attractions;

A.3. Disability access building and/or adaptation for local habitants and tourists;

B. Services qualification:

B.1. Introductory and continuous professional training (240.000 places) in 32 typical tourism occupations;

B.2. Language training (32.000 places) in Spanish, English and French;

B.3. Promotion of youngsters social inclusion (9.500 people) in the tourism labor market;

C. Tourism promotion:

C.1. Promotion of domestic tourism, exploiting the FIFA World Cup as an incentive to domestic tourism, following the motto "Selling Brazil for Brazilians".

C.2. Promotion of international tourism, exploiting the international exposure generated by the FIFA World Cup to attract new tourists to Brazil;

C.3. Implementation of an information and communication strategy about the FIFA World Cup, with three objectives: awareness, tourist information and community involvement;

D. Tourist information and support:

D.1. Support local staff training (for policemen, officers, taxi drivers, bus tour drivers, etc.);

D.2. Implementation of a tourist information system, via USB drives, mobile phones and tablets apps, toll-free service, and information totems at the entrance points, CATs and strategic high tourist flow sites;

D.3. Support for local volunteers training.

The total projected budget to implement the intervention plan was R$ 28,9 million for investments in tourist infrastructure and R$ 82,2 million for services qualification, tourist information and support (MINISTÉRIO_DO_ESPORTE, 2012a). For the line of action regarding the tourism promotion there wasn't a specific budget for the Rio de Janeiro city, only on the national level. The projected cost for event promotion, media and public relations was about R$ 6,6 million. Regarding the real budget implemented, the only modification was reported for the line of action concerning the tourist infrastructure, which only reach a execution of R$ 18,9 million (MINISTÉRIO_DO_ESPORTE, 2014).

The Brazilian Government expected, as result from the above-mentioned initiatives, an increase on the number of domestic and foreign tourists, who come specifically for the mega event. According to an econometric study commissioned by the Brazilian Ministry of Sport (MINISTÉRIO_DO_ESPORTE, 2012b), approximately 600.000 foreign and three million domestic tourists were expected. And such tourists would generate a financial impact of R$ 4 billion to R$ 5 billion across the country. Unfortunately, we could not find official estimates specifically for the Rio de Janeiro city/region. However, the expected domestic tourists allocation would be mainly for the Rio de Janeiro, with a share of 34,7% of the total number of tourists. As a baseline, for the other 10 host cities the expected allocation was 33,1% for São Paulo, 5,3% for Salvador, 4.7% for Fortaleza, 4,5% for Brasilia, 4,1% for Belo Horizonte, 3,2% for Natal, 2,2% for Manaus, 2,1% for Porto Alegre, 1,2% for Curitiba and 0,8% for Cuiaba. According the Brazilian Government (MINISTÉRIO_DO_ESPORTE, 2014), the final number of tourists exceeded the forecasts. More than one million foreign tourists come to Brazil from 202 different countries, and more than three million Brazilian tourists traveled around the country.

The strategic vision of the Brazilian Government intervention plan for the 2014 FIFA World Cup aimed that the mega event project legacy should go beyond the traditional promotion of the tourism. It also focus on provide improvements in infrastructure, service quality, employment, income generation and the transformation of the achievements in positive legacy for the country (MINISTÉRIO_DO_ESPORTE, 2012a; MINISTÉRIO_DO_TURISMO, 2013). However, we were unable to find a clear operational description, and consequently a uniform project organizer's understanding, of what would be the transformation of the achievements of the intervention plan in positive legacy. According the data gathered on documents and preliminary interviews,

the management and decision-making focus relied only on monitoring the outputs of the mega event itself and some general tangible outcomes, such as financial impacts, employment rates, numbers of visiting tourists, income generation, etc. Regarding the outcomes and impacts, according data from the Brazilian Government (MINISTÉRIO_DO_ESPORTE, 2014), the tourism industry would have generated 30.000 new jobs, an increase of 3,8%, and the income of tourism workers would have increased by 17,7% between 2008 and 2014.

Some efforts were also directed to interview tourists about their perceptions about the mega event in regard to the tourism related services. A survey conducted by the University of São Paulo (FIPE/USP) regarding the perceptions of 6.627 foreign tourists revealed that 58,5% travelled for Brazil for the first time ever, and 90,2% reported the 2014 FIFA World Cup as the travel motivation. During the period of the mega event, these tourists visited 491 municipalities, staying on average 15,7 days in the country. Among the respondents, 83,0% answered that the country met or exceeded their expectations and 95,0% have intention to return another time to Brazil. Regarding the tourism industry questions, they positively evaluated the tourist information systems (90,0%), the taxi systems (90,0%), the public transport (89,0%), and the touristic and urban ('brown') sign (81,0%). The hospitality was also evaluated positively by 98,0% of the respondents (MINISTÉRIO_DO_ESPORTE, 2014).

According data from the Brazilian Government Portal (http://www.brasil.gov.br/), the FIPE/USP also conducted surveys with 6.038 Brazilian tourists and 350 accredited journalists. The Brazilian tourists also positively evaluated the leisure and tourism attractions (87,0%), the lodging facilities (80,0%), the tourist information systems (77,0%) and the hospitality (90,0%). The journalists, about 80% foreigners, positively evaluated the FIFA World Cup hosting in Brazil. The questions related to infrastructure and services had approval ratings of over 80,0%. About 60,0% reported that the country's image has improved with the mega event, and 96,5% would recommend a trip to the Brazilian destinations. The tourism information had positive evaluation to 90,4%, but there was reported some issues concerning customer services and the lack of availability of promotional material in foreigner languages.

According data from the Word Cup Portal (http://www.copa2014.gov.br/en), the Datafolha Institute performed a survey with 2.209 foreigner tourists, coming from over 60 countries, in São Paulo, Rio de Janeiro, Brasilia, Belo Horizonte, Salvador and Fortaleza. Among the respondents, 74,0% visited the Rio de Janeiro. The survey uncovered that the 2014 FIFA World Cup general organization was perceived as excellent or good by 83,0% of respondents; 12,0% considered it regular and only 3,0% as bad or very bad. Among the respondents, 51,0% considered that the 2014 FIFA World

Cup organization was better than the expectation they had before arriving in the country. Concerning the tourism industry, most of the respondents evaluated as excellent and good the quality of air transport (76,0% approval), the quality (84% approval) and the diversity (83,0% approval) of the tourist attractions, the quality of the hotels (64% approval) and the security (82% approval). The image of the Brazilian people was also well evaluated, 95,0% of the respondents rated as very good and good the Brazilian hospitality, and the attributes of kindliness, openness and honesty were confirmed by respectively 98,0%, 95,0% and 84,0% of the respondents. However, the overall perception was not so positive regarding the service prices. Those from the hotel sector were evaluated as bad and very bad by 43,0%, and the food and air transport services price had negative ratings above the survey average. In the spontaneous questions concerning the country negative attributes, the most frequently mentioned items were related to poverty, social inequality, slums and homeless people (18% of respondents), and the lack of security, crime or violence, by 16% of respondents.

These data show that the 2014 FIFA World Cup project had an overall positive impacts perception regarding the tourism industry from leisure tourists and professional journalists perspective. However, this kind of impact evaluation effort doesn't provide any information with focus on promoting positive and sustainable legacies, and consequently, value/wealth creation, competitiveness and local development to the city and local habitants. In our case study effort, we did not identify surveys or performance evaluation systems to deal with the planning and management issues of the positive legacies generated by and for the 2014 FIFA World Cup project. We neither found efforts from mega event project managers in regard to monitoring the intangible success factors, nor assessing the contribution and influence of the intangible capitals to the Brazilian Government plan from the point of view of the stakeholders.

The 2014 FIFA World Cup project managers only kept their focus on monitoring the project deliverables directed related with the hosting activities, by traditional project management practices, or the tourists impact perception, using surveys or polls as presented in the last paragraphs. However, from the legacy perspective, it is important to establish a strategic vision from the host city planning (not a generic one, as the presented above) and performing an adequate planning and management of the success factors that could support the mega event projects to play a significant role as catalyst for the host city/region local development, economic growth and competitiveness (CLARK, 2008; OECD, 2010; PREUSS, 2007;2015). From the knowledge-based management perspective, the ability to create economic value from intangible assets depends highly on the management capabilities of the organizations and nations, and also the implementation of appropriate business strategies (OECD, 2006a).

In the current knowledge economy, the new sources of growth tend to turn from the tangible to the intangible aspects, which demand a new approach to work, organization, accounting and way of doing business (ALLEE, 2000). Some findings also indicate that the human resources (including the human and social capitals) and the way that societies and organizations works and are organized are the most important determinant of the wealth of nations, specially when adopting a more holistic and modern perspective of national growth that goes beyond just economic performance and includes human, social, cultural and political development and general well-being (MALHOTRA, 2003; WORLD_BANK, 1997). In this point of view, the intangible impacts are potentially the major economic benefits of mega event projects, by its nature, variety and indirect influence on economic factors (PREUSS, 2007;2010). But the value of nations and organizations, and consequently the value-creation potential of their projects and initiatives, is directly related to their intellectual capital and depends on systems to visualize, cultivate and capitalize on value-creation interactions (EDVINSSON, 2003; EDVINSSON; BOUNFOUR, 2004).

The lack of a performance tool to deal with the planning and management of the positive legacies generated by and for the 2014 FIFA World Cup project and with monitoring the intangible success factors (and its contributions and influences), strengthen the justification of carry out the present study. The tourism industry, as discussed in the chapter 4, has become increasingly important due to its influence on the socioeconomic development of nations. This recognition is due to the dynamics of such industry as a major generator of employment, income, and public and private capital investment (FECOMERCIO, 2011).

The investment in the tourism industry has been recognized as a valuable driver for economic growth and development. The international tourism has progressively grown above expectations over recent years and the hosting of mega event projects is one of the main policies to develop the tourism industry worldwide, mainly due to the potential impacts of these events as trigger for local economic development (CLARK, 2008; PREUSS, 2007). The intensification of the competition among nations to became a destination hub and attract visitors and external capital flow, raise the need to make enjoyable cities to citizens, tourists and investors, and to spread the benefits to the surrounding region trying to multiply its impact (UNWTO, 2015). Indeed, as we can see in the strategic vision of the Brazilian Government for the 2014 FIFA World Cup, the tourism relating impacts keep as the most propagated potential benefits from the mega event project.

Both the 1992 Barcelona and 2012 London Olympic projects helped to raise some evidences that the focus of the mega event project legacies has to rely on a perspective

of a modern urban development strategy. According BRUNET (1995), OECD (2006b) and PREUSS (2015), this strategy can be understood as a combination of urban and infrastructure modernization with focus on a positive economic catalyst effect on greater capitalization, growth of the service sector, internationalization, attractiveness, centrality, productivity, competitiveness and quality of life. The existing evidences about the propagated positive, broader, long-term benefits from mega event projects show that they do not occur by accident or without an effective action (CLARK, 2008; OECD, 2010). Although unplanned impacts can be arise, the planning and management of the positive impacts and legacies must be performed to reduce the mega event project inherent risks and to ensure an effective investment reward to the host city/country. The lack of a strategic vision for the event associated with the long-term host city/region strategic vision and, mainly, a proper planning and management initiative regarding the positive impacts and legacies could lead to lost opportunities and wasted resources (BOUKAS et al., 2013; CLARK, 2008; PREUSS, 2007).

Hence, taking into consideration the findings presented, our case study specific research problem to the model design and development is to identify how can we measure the impacts regarding the intangible factors that can trigger the transformation of the 2014 FIFA World Cup achievements in positive tourism legacy for the host city, and evaluate in which extend the Brazilian Government intervention plan achieved its strategic vision according the expected changes in value creation potential envisioned by some stakeholders.

In the step two of the DSR process proposed by PEFFERS et al. (2007), we defined the performance objectives for the solution. As aforementioned, the linear physical (tangible) paradigm about an organization, nation, or project performance and development has been questioned. Several studies presented in our literature review have demonstrated the dominant contribution of the intangible aspects to competitiveness and economic growth. Both for the managerial, decision-making and policy perspective, we have to change how the organizations, nations, and projects deal with their intangibles assets for leveraging better results and stakeholders support.

According BOUNFOUR (2003b) and BOUNFOUR; MIYAGAWA (2015), the intangibles challenge the way organizations act, function, think and deal with the value creation, including its main driving factors. Hence, if we understand how the various sources of value creation can be integrated with basis on the intangible assets we probably will be in the forefront to deal with the various social and economic transformations that are underway, and which call for a redesign in business models, organizational strategies and national policies.

From the decision-making perspective, the balance between the potential benefits and downsides (see section 2.1.3) from hosting a mega event has been questioned due to the high investment demands. A significant number of studies (KASIMATI, 2003; MATHESON, 2002; OLIVEIRA, 2012; ZIMBALIST, 2010) failed in collecting scientific evidence to support the delivery of direct economic benefits in hosting two of the bigger and celebrated mega events, the Olympic Games and the FIFA World Cup. Even the post exploitation of the improved infrastructure delivered from the mega event project interventions, which can generate significant intangible benefits to the host city/country, is over debate. Two concerns in that regard are the maintenance costs of the mega events specific equipment after the event, and the costs to pay for the set of application only necessary during the mega event, such as the security demands. Unfortunately, the international experience shows that such issues are not regularly fixed (OLIVEIRA, 2012), and there is a constant strategic behavior of cost underestimation in the mega event project's initial phases in order to make easier the project approval, as in other types of mega projects (FLYVBJERG, 2008).

From the managerial perspective, a non-ending list of factors also contribute to a poor performance scheme in terms of public support, and economic and environmental outcomes, such as: a) uncertainties and risks concerning value creation, budget allocation, return on investment, reevaluation of priorities regarding new sources of growth, decision-making, funding, operations and planning; b) complexity and dynamism, both in the technical/technological and social dimensions; c) difficulty in managing; d) cost overruns; e) delays; f) short use; g) falling revenues; h) overall failure; i) need of social and political support; j) marketing and promotion; k) inadequate deliberation about risk and demands; l) project culture and rationality; m) public-private partnership conflicts of interest; n) power game; o) ambiguity; p) lacking in accountability; and, q) poor cooperation between partners. A bad general audience perception about these factors could lead to the Megaproject Paradox effect, and in ultimate consequences, to riots and public disturbances with an agenda against the mega event projects (ALTSHULER; LUBEROFF, 2003; BOUNFOUR, 2003b; BRUIJN; LEIJTEN, 2008; FLYVBJERG et al., 2003; FRICK, 2008; JENNINGS, 2012; KERZNER, 2009; ORUETA; FAINSTEIN, 2008; VAN MARREWIJK et al., 2008; WALDER; VERMA, 2004; ZIMBALIST, 2010).

Indeed, the public opposition to the sports mega events has been a reality in the last years (GIULIANOTTI et al., 2015; KÖNECKE; SCHUBERT, 2014; MÜLLER, 2012). According WALDER; VERMA (2004), it is difficult to see, looking forward, how the public acceptance regarding the mega projects can be supported without a greater confidence in the benefits of these massive undertakings. The reasons for opposition vary according

the involved stakeholders, but according MÜLLER (2012) the focus on delivering positive aspects about the mega events might be more important for managers and decision-makers than minimizing the negative side-effects.

Therefore, the acknowledge regarding the intangible factors that can trigger the transformation of the 2014 FIFA World Cup impacts in positive tourism legacies for the host city, and the evaluation of the extend which the tourism intervention plan achieved its strategic vision, according the expected changes in value creation envisioned by some stakeholders, is a critical point. It is important to note that with basis on the definitions of measurement and evaluation provided by BEHN (2003), BOUNFOUR (2003b) and EZEMENARI et al. (1999), we will assume in the current study that measurement is the act of identify if a given impact (among which the possible ones that can be generated for and by the project) emerge or not, whereas evaluation is the act of identify the subjective judgment about the value of the modification that the impact entails.

Monitoring such information can be valuable for improve the decision-making process and strategic management, as well as for deal with transparency and governance issues concerning the project stakeholders and external audience. The positive association between macroeconomic growth, competitive advantage, greater productivity, income and the intangible capital suggest a possible missing link between the mega event projects investment and its outcomes, impacts and legacies. And also in the mega event project arena, the uncertainty, competition and a fewer time to gather information and take decisions have increased in the last years. To deal with these challenges BOUNFOUR (2003b) recommends that a dynamic strategic approach to value-creation with basis on the intangibles appear to be a valuable tool to repositioning the organizations, business, and nations performance. Thus, we can infer that it could also be true to improve the mega event projects legacies performance. A key guideline for a dynamic strategic approach could be to continuous collect variables to understand the new challenges and rationales (ways of thinking) that influence the internal and external environments, to build a definition of future vision, and to design and, most important, to implement a dynamic action plan.

In this sense, the perspective for the intangible asset measurement and evaluation of capturing and expressing the performance of a particular organization, or project in achieving its goals according to a specific strategic vision (LÖNNQVIST, 2002) seems to better fit with the purpose of our case study problem. In such perspective, the intangible assets evaluation could be analyzed on different dimensions and require the establishment of indicators, often called success factors or key performance indicators (KPIs). These indicators are key aspects that should be measured to reflect how far the

2014 FIFA World Cup intervention plan is from its vision for success, according to predefined goals, or according to the stakeholders' expectations. In addition, to fit the BEHN (2003) recommendations regarding the overall management strategy to improve the performance of a given intervention, we defined both the evaluate and improve objectives as the two specific managerial purposes of our performance evaluation process. We decided to follow this alternative for trying to clear the 'inside-the-black-box relationships' that connect the expected changes of the interventions in perceived positive impacts and legacies.

As mentioned in the section 2.1.4, PREUSS (2007); (2015) proposed a bottom-up approach to the identification of the mega events projects impacts and legacies. His approach is based on the long-term development plan for the host city/region and takes into account the tangible (hard) and intangible (soft) structural changes delivered by a mega event project. However, the Preuss approach is only conceptual and the existence of valid operational methods ready to use on the assessment and evaluation of mega events projects intangible impacts and legacies is still unclear. Therefore, the performance objective for our solution is to develop a new system application to deal with the mega event projects impact performance based on the intangibles, taking a holistic view and using a subjective (qualitative) judgment to determine a composite index that may be used for objective comparisons. This system should be able to meet our performance standards of measure and evaluate the perceptions of the mega event project stakeholders about the impacts of the 2014 FIFA World Cup intervention's on the intangible capital regarding the tourism industry at Rio de Janeiro region, and to provide information for an effective strategic management and decision-making directed to generate positive legacies. The final result pursued is to assess how the mega event project performance is really expected, perceived, and evaluated by different stakeholders based on the intangibles, and how can we increase the likelihood of successful projects, contributing for inducing value creation, competitiveness and local development.

We expect that this performance objective for our solution can provide the basis for mega event projects managers and decision-makers are able to build a dynamic strategic approach, and help them to face their main current challenges. Among them: a) The need of a strategic vision for the mega event project related to the host city/country future demands, and a proper planning and management of impacts and legacies to maximize them; b) The emergence of the intangible aspects as new sources of growth and the intangible assets management as an essential task for businesses and nations that want to succeed in the new century reality; c) The uncertainties about value creation,

budget allocation, return on investment and reevaluation of priorities; and d) The high cost - poor performance ratio perceived by the general audience.

Next, we proceed to the third step of the DSR process proposed by PEFFERS et al. (2007), the design and development step. Here, the researcher may create the artifact in which a research contribution is embedded in the design, as well as, present its architecture and functionality based in the theory borne by the solution. Thus, we started by looking for the literature for potential findings that could help us to meet the requirements for the solution, i.e. the specific case study problem, the performance objective and standards, and the opportunities and unarticulated needs discovered in the preceding steps of our DSR process cycle.

Despite all controversies and challenges regarding the measurement and reporting of the intangibles, a consensus was reached about the fact that a better and consistent measurement and disclosure of the intangibles, could have a positive impact on performance by improving internal controls and risk management, raising the quality of strategic decision and increasing overall transparency for the stakeholders (OECD, 2013b). Therefore, the issue of how to measure the accumulation and, especially, the usage and management of intangible assets and resources should become a major concern for managers and decision makers who want to succeed in the Knowledge Economy. Other apparently consensus is that the real paradigm shift regarding the intangible data evaluation is its complementarity with the traditional tangible data. Thus, instead of change an approach by the other, the tangible by the intangible, most recent approaches to intangibles highlights such complementarity to improve the value-creation process.

Throughout the literature review, we identified two major perspectives (LÖNNQVIST, 2002), eight main approaches (BOUNFOUR, 2003b) and at least 42 different models (SVEIBY, 2010) for the intangible asset measurement, evaluation and management. For BOUNFOUR (2003b) each approach has specific assumptions and focus of analysis, depending on their developers' background, as we can see in the figure 4. For LÖNNQVIST (2002) the difference between the two perspectives is that one is concerned with capturing and expressing the performance of a particular organization (or project, or business) in achieving its goals, according to a specific strategic vision, whereas the other focuses on estimating the value of an organization (or project, or business) to better explain the composition of its total value or its market value. In both cases, knowledge managers should concern with to identify what would be the managerially relevant intangible assets and success factors, and the activities related to improving or utilizing these assets.

In fact, the differences between the models arise from the different perspectives to deal with the complexities regarding the measurement of the intangibles in different contexts (see section 2.3). Each approach presents advantages and disadvantages. “Some models focus primarily on financial metrics and offer a restricted notion of knowledge assets. Other take a more holistic view but require subjective judgment in determining a composite index that may be used for objective comparisons” (MALHOTRA, 2003). Noteworthy that, paraphrasing BONTIS (2001), even 15 years after his work reviewing the literature concerning the assessment of knowledge assets, and almost 30 years after the primary works about the intangibles theory, we are still looking for improve the operational measures and finding new applications and contexts to the intangible measurement.

The current study falls into the reality of finding new applications and contexts to the intangible measurement. We are trying to identify how can we measure the impacts regarding the intangible factors that can trigger the transformation of the 2014 FIFA World Cup achievements in positive tourism legacy for the Rio de Janeiro city, and evaluate in which extend the Brazilian Government intervention plan achieved its strategic vision, according the expected changes in value creation potential envisioned by the stakeholders. The result pursued is, based on the intangibles, to assess how the mega event project performance is really expected, perceived, and evaluated by different stakeholders and how can we increase the likelihood of successful projects, contributing for inducing value creation (positive legacies), competitiveness and local development.

One possible strategy is to conduct a research gathering all potential alternatives for intangible measurement and running an extensive cost-benefit analysis among them, to describe its principles, fundamentals and operationalizations, and to identify which model best respond to our requirements. Some authors tried to follow this strategy in different depths and with different point of views (see section 2.3). However, instead of escape from our main study objective and with basis on the findings of some studies gathered in the literature review, we chose to focus on the analysis performed in the section 2.3 about the principles and fundamentals of the key models already published concerning the policy dimension. In addition of these factors, we took also into account the context, requirements, and perspective presented in the preceding steps of our DSR process cycle, to propose a new system application to deal with the mega event projects impact performance based on the intangibles.

According MILLER, V. A. et al. (2009), the first step when developing a new scale artifact is to define the construct of interest. A construct can be meant as a way to represent a phenomenon that we believe to exist but that we cannot observe directly. A clear definition of the construct and its boundaries is critical, because this definition will

guide the development of the model to represent the construct, and the generation and/or selection of the items to be included on the operational model to measure it. An ambiguous definition and the wrong theory about the construct can create difficulties and result in an artifact that could have no predictive or explanatory power, which is a waste of time and resources (MILLER, V. A. et al., 2009).

Therefore, our construct of interest was objectively defined and delimited as: The perceptions of the mega event project stakeholders about the impacts of the 2014 FIFA World Cup intervention's on the intangible capital regarding the tourism industry at Rio de Janeiro region that can generate positive legacies. This construct of interest was defined and delimited based on the literature review, the documental analysis and the preliminary interview with the 2014 FIFA World Cup project managers and decision-makers. As presented in section 2.1.4, impact can be meant as a change that is a result or consequence of an action and/or an intervention, whereas legacy is all planned and unplanned, positive and negative, tangible and intangible structures created for and by a mega event that remain longer than the event itself (PREUSS, 2007). With basis on these definitions, the documental analysis helped us to identify the strategic vision of the event and to collect information regarding the planning and management of impacts and legacies from the 2014 FIFA World Cup project. The preliminary interviews were useful for validate some points concerning the strategic aspects for the event, to gather additional information about challenges, potential risks, opportunities, and gaps of the planning and management of the project, and to understand the relevance and viability of its impacts and legacies.

The boundaries of the intangible capital measurement and evaluation was delimited, in our context, mainly with basis on the findings of BOUNFOUR (2003b), LÖNNQVIST (2002) and OECD (1996). According to them, we know that a) the "… performance depends largely on the quality of their intangible resources, and their capacity to maintain and develop them over a long-term period" (BOUNFOUR, 2003b); b) "In many cases qualitative information would be helpful in pointing the way forward" (BOUNFOUR, 2003b); c) "An unknown proportion of knowledge is implicit, uncodified and stored only in the minds of individuals" (OECD, 1996); and d) If someone is concern about a perspective of capturing and expressing the performance of a particular mega event project in achieving its goals according to a specific strategic vision with basis on the intangible capital, he/she may analyze the different dimensions of the intangible asset and establish a series of indicators, often called success factors or KPIs (LÖNNQVIST, 2002).

After the definition and delimitation of the construct of interest, we operationalized the measurement of the construct by building a conceptual framework and an operational

(experimental) model. The “Operationalization is the process of linking a construct definition to one or more specific, concrete indicators that can be measured, such as items on a self-report questionnaire” (MILLER, V. A. et al., 2009). In our case, according the performance objective and standards for our solution, we decided to develop a new system application built using a strategy of adaptation of existing instruments (MILLER, V. A. et al., 2009), on a mixed approach from merging the concepts of the Intellectual capital (IC) and the Dynamic approaches to the intangibles. We took such strategy with basis in the work of BONTIS (2001) that raised the importance to the development of the intangibles field of building emerging measures on previous researchers’ work. Hence, a common set of definitions and perspectives could be used.

The IC approach has its foundations on the development of specific components of the IC (ex.: human, structural, market, innovation capitals, etc.) to modeling and leveraging the organizational intangibles assets and resources. The focus of such approach is to develop a sort of dual IC account path on internal (management team and decision-makers) and external (society, partners, financial community, customers, shareholders, etc.) stakeholder value-creation. For each of the components of the IC approach, specific KPIs should be proposed, monitored and analyzed, and the model output takes the form of IC reports addressed both to internal and external stakeholders. The Dynamic approach is based on a dynamic view of the organizational performance and development as the main focus for action. It has its foundations on the integration of four determinants factors for the competitiveness: the resources, the processes, the intangible capital and the performance outputs. For a better economic and financial leveraging, the integration of the sources of value creation (resources, competences and processes) have to be linked with the manifestation of the intellectual capital value (outputs) in a dynamic way, and the model output takes the form of performance indexes and an overall estimate of the IC value (BOUNFOUR, 2003a).

In operational terms, we decided to use the Intangible Capital Rating Model – CRIE/BNDES – (CAVALCANTI, 2007; DEUTSCHER, 2007;2008), based on the IC approach, and the Intellectual Capital Dynamic Value Model – IC-dVAL – (BOUNFOUR, 2003a;2003b), based on the Dynamic approach, as sources of items to operationalize the measurement of the construct. The CRIE/BNDES model was selected due its focus on the identification of the assets and resources the organizations should have to implement their future strategic vision. Such focus provides a nature of strategic subordination to the model approach, a strong argument to meet our performance standards. According DEUTSCHER (2008), the CRIE/BNDES model was created with the purpose of enabling investors and other stakeholders to identify the competitive position of a given organization being evaluated in relation to the market, and encourage

managers to create action plans to build or acquire intangible assets to sustain the organization competitive advantages.

The IC-dVAL was selected because of its purpose of developing a dynamic vision for the organizational performance and competitiveness. According BOUNFOUR (2003b), the IC-dVAL provides an integration link between the financial value of the intangible assets, the resources and the internal performance of the organization evaluated. The expected result with its use is the identification and measurement of the IC performance, in such dynamic vision, looking for an alignment between the processes driven to value-creation from stakeholders' point of view.

As we could see, both the CRIE/BNDES and the IC-dVAL models were originally created to enabling stakeholders to identify the private organizations competitive position and performance, based on intangibles. However, both developers have already applied each model in different situations. DEUTSCHER (2008) on the development of a strategic action plan for an exporting Brazilian design consortium. And BOUNFOUR (2003b) on public organizations and in the assessment of the impact of European R&D programs.

During the conceptual phase design of our new system application, which we called Mega Event Intangibles Impacts (ME-I^2) Model, we opted by building the core of our model with the concepts of the IC components development provided by the CRIE/BNDES and complement it with the dynamic measure of the competitiveness by the dynamic value of the Intangible capital, provided by the IC-dVAL. We took such decision by a twofold reason, for one side to try capture the contributive vision of each intangible capital dimension and to maximize the link between the intangible assets and the proposal of actions focusing on future value-creation (positive legacy), and for the other side to profit from the dynamic vision for the organizational performance and competitiveness. Consequently, we expect to meet the performance standard of dealing with the aspirations of value creation, competitiveness and local development from the mega event project impacts.

The selection of the intangible capital dimensions, assets and indicators to build our mixed approach was performed according the recommendations of MILLER, V. A. et al. (2009). Thus, to meet our requirements and context, we begun from the original models, made some adaptations on the existing instruments, discarded some items when they bore no relevance to the construct measurement, and included some items we generated to assess the content that was not addressed. The key modifications implemented at the core of our conceptual model, based on the IC concept provided by the CRIE/BNDES model, was: a) the reduction of the number of dimensions from six to five, because of the inadequacy of the financial capital dimension in the study context, once the unique

source of funding came from public resources; b) the change of the name from 'environmental' dimension to 'ecosystem' dimension to avoid misinterpretation and conflicts with the expression ‘environmental’, frequently used in the mega event context to refer to the physical and nature (ecology) environment; c) the inclusion of the reverse approach related to the influences performed by the ecosystem dimension components. At the CRIE/BNDES original model, this dimension was concerned only with the influences triggered by external factors on the enterprise. At the mega event project context, we are concerned in collecting what are the perceptions about the mega event project influences on the ecosystem where it operates; and finally, d) changes in some assets and indicators to better reflect the intangible factors required to future value creation (positive legacy) in the Tourism industry.

Hence, five intangible capital dimensions compose the conceptual framework of the ME-I^2 Model: strategic, human, structural, relationship and ecosystem (figure 14). The strategic, human, and structural dimensions concerning the mega event project internal intangible aspects, the relationship dimension concerning the boundaries factors between the mega event project and its ecosystem, and the ecosystem dimension representing the external intangible aspects. Each dimension incorporates a given group of assets and/or competencies.

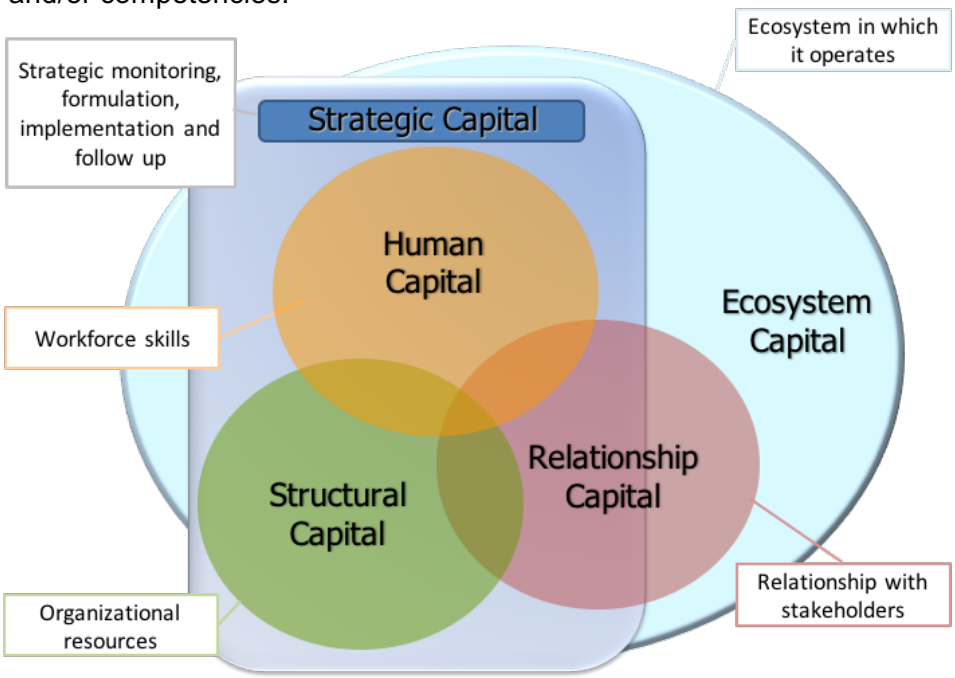


Figure 14 - The ME-I^2 Model conceptual framework

The strategic capital is composed by two assets: a) the competence for monitoring the external environment, which deals with the process of capturing, processing and transforming the information into knowledge, and the knowledge dissemination among the inside stakeholders; and b) the competence in formulating a given strategy,

implementing the action plan, and monitoring its results and consequences. The strategic capital dimension and its assets come from the concepts of the resource based view (RBV) and the dynamic capabilities view. The resource based view (RBV) is an attempted to look at organizations in terms of their resources rather than in terms of the products or services that they generate. The great part of such resources are considered as specific and non-tradable, non-imitable and nor transferable. Thus, the portfolio of resources available influences the organizational strategy. It is from the identification, development and exploitation of the organization resources and capabilities that we can provide a basis for addressing some key issues in the formulation of the organization strategy, create an advantage and keep its competitive position in a sustainable manner (BOUNFOUR, 2003a;2003b). The dynamic capabilities view is a concept developed to identify the dimensions of a given organization capabilities that can be sources of competitive advantage. It also pursues to explain how combinations of internal and external competences and resources can be developed, deployed and protected to address changing environments. According this view, it is not only necessary accumulate a large stock of valuable assets, but also you should develop many useful capabilities to deploy them (TEECE et al., 1997).

The Human Capital is characterized by the set of competences, abilities, skills, knowledge, expertise, commitment, motivation, etc., of the mega project workforce. The workforce is responsible for delivering the mega event value proposition for the group of external stakeholders. This group can be separated in institutional stakeholders, such as local industries and business, development agencies, professional and business associations, NGOs, politicians (political parties), mega event sponsors and partners, etc., and individual stakeholders, such as foreign/national tourists and local habitants/population (PREUSS, 2015; RODRIGUES et al., 2015). The human capital dimension is composed by two assets: a) managers and decision makers (who work at the strategic level), and b) the operators (who do not work at the strategic level, but operational).

The structural capital is characterized by the set of organizational processes, procedures, technologies, information, intellectual property and other infrastructure to support the human capital. In our mega event project context, it is composed by two assets: a) the corporate governance system, concerned with the communication transparency; the social and environmental responsibilities, the external control by a board with independence of decision makers; and, b) the administrative systems, represented by concepts, models, routines, procedures, processes, manuals, organizational structure, management tools, culture and rationality.

The relationship capital is characterized by the project liaisons and connections with the following four assets: a) customers and/or users, b) suppliers and/or partners; c) brands, reputation and identity perceptions by national tourists and local habitants (national sphere) and foreign tourists (international sphere); and, d) networks, partnerships and strategic alliances.

The human, the structural and the relationship capital dimensions and their assets come from the concepts developed by the Skandia Navigator, proposed by EDVINSSON; MALONE (1999). According to them, the intangible capital of a given organization is divided in three basic dimensions: human capital, structural capital and customer (updated later to relationship) capital. With the analysis of these tree dimensions, they sought to identify the roots of the organization value by identifying and measure the hidden factors that underlie “the visible company”.

Finally, the ecosystem capital is characterized by a set of external factors to the mega project, concerning the ecosystem in which it operates. Such capital embraces the values and the political, educational, economic, social, legal and environmental issues related to five assets: a) the financing system; b) the regulatory environment (institutional aspects); c) the innovation and entrepreneurship environment; d) the infrastructure and logistics; and, e) the incentives for the sector/industry development. Important to note that on the original CRIE/BNDES model, the purpose of the environmental dimension was to identify the external influences on the assessed organizations. In the ME-I^2 Model, our approach is also to identify the reverse flow, what are the potential effects of the mega event project on the ecosystem in which it operates. We presume this new approach will allow a better identification of the potential external impacts of the mega event project interventions, providing an indicative of the interventions output, as proposed by the IC-dVal (BOUNFOUR, 2003b), and responding the external aspect of the construct validity proposed by MESSICK (1995).

The ecosystem capital dimension and their assets come from the concepts developed by ALLEE (2000) and CAVALCANTI; GOMES (2000) regarding the importance of introduce an external component perspective on the intangible capital measurement. According ALLEE (2000), "The organizations do not exist in a social or environmental vacuum. However, rarely the business models include the dynamic exchanges with the society or the planet and its resources." Such practice can be perceived as a narrow economic and business view, once the social and environmental factors are increasingly impacting the business results and value proposition.

The ecosystem capital dimension is the foundation on which the other intangible capital dimensions are developed. To leverage the strategic, the relationship, the structural and the human capital dimensions is mainly an internal duty of the

organization, whereas to build the ecosystem capital is a matter of public policy. Thus, the ecosystem capital does not belongs to the organization, but interacts with it (CAVALCANTI; GOMES, 2000). The organizations have to know the environment in which it operates and have an accurate definition of its strategic vision, its market position and its industry. It is essential "… to be alert to the changes, to be flexible, to realize the technological innovations…" (CAVALCANTI; GOMES, 2001).

Both the external and internal environments must be in perfect harmony and the workforce shall be committed with the mega event project strategic goals to generate future and sustainable value creation (positive legacies), competitiveness and local development. Although it can be perceived an effort to delimitate the five intangible capital dimensions on the design of the ME-I^2 Model conceptual framework, due to the operationalization requirements of the construct measurement, the effective knowledge management and value creation depends more on the synergy between the five dimensions (figure 14), than the management of each of them individually (CAVALCANTI; GOMES, 2001).

For each asset and/or competence was proposed at least one indicator to measure it. When possible, we provided multiple rather than single indicators for measure the components of our construct, since "The use of multiple items or indicators allows the evaluation of the reliability of the measure" (NIELSEN, 2014). Hence, the ME-I^2 Model operational version comprehends five dimensions, 15 assets and/or competences, as described above, and 42 indicators, as shown in the table 5. The indicators should represent observable aspects in terms of impacts and/or effects due to the mega event interventions.

Table 5 - The ME-I^2 Model operational version

Intangible capitals	Assets and competencies	Indicators
1. Strategic	1.1. Competence for monitoring the external environment (competitive intelligence, benchmarking, scenario analysis)	1.1.1. Information collection process 1.1.2. Information processing / transformation into knowledge 1.1.3. Knowledge dissemination process
	1.2. Competence in formulating, implementing and following-up the strategy	1.2.1. Strategy formulation process 1.2.2. Strategy / action plan implementation process

		1.2.3. Strategy monitoring process (results and consequences)
2. Ecosystem	2.1. Financing system	2.1.1. Degree of comprehensiveness, adequacy and accessibility of the financing system
	2.2. Regulatory environment (Institutional Aspects)	2.2.1. Level of industry regulation, operational stability and long-term investment
	2.3. Innovation (R&D) and entrepreneurship environment	2.3.1. Maturity level of the innovation apparatus 2.3.2. Innovation capability 2.3.3. Incentive program for new business creation and entrepreneurship
	2.4. Infrastructure and logistics	2.4.1. Physical (transport, security, energy and supply chain) 2.4.2. ICTs 2.4.3. Tourist Information service and support
	2.5. Incentives to the sector/industry development	2.5.1. Sector/industry development Level and growth landscape
3. Relationship	3.1. Customers and/or end users relationship	3.1.1. Foreign tourists (international sphere) relationship 3.1.2. National tourists and local habitants (national sphere) relationship
	3.2. Suppliers and/or partners relationship	3.2.1. Relationship within government bodies' 3.2.2. Relationship with funding and/or development agencies 3.2.3. Relationship with industry organizations and business associations

	3.3. Host city brand / reputation / identity perception	3.3.1. National sphere 3.3.2. International sphere 3.3.3. Communication strategy (Plan)
	3.4. Interaction networks	3.4.1. Service/product development potential 3.4.2. Industry development potential 3.4.3. Degree of network system articulation and governance
4. Structural	4.1. Corporate governance system	4.1.1. Degree of transparent communications for the society 4.1.2. Degree of external controlling / accounting by an independent board 4.1.3. Degree of social responsibility 4.1.4. Degree of environmental responsibility 4.1.5. Degree of professional management
	4.2. Administrative systems	4.2.1. Maturity and quality of the process management and/or certification 4.2.2. Maturity of management systems (ERPs) 4.2.3. Maturity of performance assessment / operational efficiency systems 4.2.4. Maturity of the operational risk mapping and follow-up 4.2.5. Maturity of culture and rationality agreement process
5. Human	5.1. Managers and decision makers (strategic level)	5.1.1. Human resources adequacy regarding the mega event project objectives

		5.1.2. Training and competence management 5.1.3. Motivation and commitment to results
	5.2. Operators (operational level)	5.2.1. Human resources adequacy regarding the interventions objectives 5.2.2. Training and competence management 5.2.3. Motivation and commitment to results

After the selection of the capitals, assets and indicators (i.e. what variables should be collected), we formulated the evaluation matrices and questions and defined how to collect data from the set of dimensions and indicators. Aware about the complexity regarding our construct, involving a subjective (qualitative) judgment, and the measurement of the intangible assets based on perceptions, we recommend that the data collection be performed in a face-to-face interview basis.

The measurement and evaluation of the mega event project interventions impacts is achieved from an evaluation matrix in which the impact/effect was distributed into quartiles. Starting from zero (neutral) impact to the positive (improvement) **or** the negative (worsening) sides, until a maximum theoretical potential for each side, each stakeholder has a five-point graduating scale (0 to +2,0 points or 0 to -2,0 points) to evaluate its perception (table 6).

Table 6 - Impact evaluation matrix

Improved				No impact	Worsened			
Completely	Quite	Somewhat	Slightly	Neutral	Slightly	Somewhat	Quite	Completely
2,0	1,5	1,0	0,5	0	-0,5	-1,0	-1,5	-2,0

The option for this data collection approach, using a Likert five-type scale, to the intellectual capital was due to a strong and positive relationship (R^2=0,56, p<0,001) between such kind of measure and business performance found by Bontis in a previous pilot study (BONTIS, 2001). Hence, each stakeholder should assign the correspondent note/score according his/her perception for each one of the 42 indicators, answering the question: What is the impact/effect of the mega event project interventions in this asset or competence, according this indicator (improved, worsened or no-effect)?

Following the DEUTSCHER (2008) propositions, the stakeholder`s answers should not be based on a merely speculation or vague opinions, but on something which can be supported with evidence. Therefore, for each indicator was formulated one confirmation question (table 7) to capture the stakeholder's knowledge about the impacts/effects of the mega event interventions on the respective asset or competence, and the foundations of his/her perception in a more objective and concrete manner. Thus, the interviewer must not just ask by the perception about the mega event project impacts, it becomes necessary to check and understand the foundations of the perceptions and if it corresponds to a logical reality. We assume this approach avoided misunderstandings and minimized the risk of misinterpretations, and consequently evaluation of different concepts by different stakeholders, dealing with the consequential aspect of the construct validity proposed by MESSICK (1995).

Table 7 - The ME-I^2 Model confirmation questions

Assets	Indicators	Questions
1.1. Competence for monitoring the external environment (competitive intelligence, benchmarking, scenario analysis)	1.1.1. Information collection process	An efficient mechanism to monitor the external environment (market, political, social, demographic and technologic) was used?
	1.1.2. Information processing / transformation into knowledge	The collected information was transformed into useful knowledge?
	1.1.3. Knowledge dissemination process	The knowledge gathering by the managers was disseminated to stakeholders?
1.2. Competence in formulating, implementing and following-up the strategy	1.2.1. Strategic formulation process	A well-structured process of strategic formulation, with the support of qualified external consultants and involving key stakeholders, was used?
	1.2.2. Strategic / action plan implementation process	A process of strategic implementation (BSC or similar) to explain the value-creation to stakeholders was used?
	1.2.3. Strategic monitoring process (results and consequences)	A system for monitoring the goals and targets, based on periodic reviews of the strategy, was used over the period?
2.1. Financing system	2.1.1. Degree of comprehensiveness, adequacy and accessibility of the financing system	Has the industry a comprehensive and appropriate environment of funding?

2.2. Regulatory environment (Institutional Aspects)	2.2.1. Level of industry regulation, operational stability and long-term investment	Has the industry a clear and stable regulatory framework which encourages the long-term investments from constituent organizations?
2.3. Innovation (R&D) and entrepreneurship environment	2.3.1. Maturity level of the innovation apparatus	Are there world-class R&D institutions that contribute to adding value to the industry products throughout their research? Are there government incentive programs, sectorial funds and/or grants to fund the industry related research?
	2.3.2. Innovation capability	The industry is able to map out trends, take ownership from the market intelligence, and innovation apparatus to develop and deploy new products, services and processes?
	2.3.3. Incentive program for new business creation and entrepreneurship	Are there incentive programs for entrepreneurship and new business creation?
2.4. Infrastructure and logistics	2.4.1. Physical (transport, security, energy and supply chain)	Is there a physical infrastructure system which fits the industry needs with competitive costs?
	2.4.2. ICTs	Are there efficient, appropriate and cost-competitive telephone and internet access systems, fixed and mobile?
	2.4.3. Tourist Information service and support	Are there tourist Information service and support systems to enabling an autonomous tourist access to places of interest and exploration around the host city?
2.5. Incentives to the sector/industry development	2.5.1. Sector/industry development Level and growth landscape	Has the industry a favorable environment for growth and future development?
3.1. Customers and/or end users relationship	3.1.1. Foreign tourists (international sphere) relationship	A data collection about the expectations, perceptions and motivations regarding foreign tourists was performed? An adequate program to encourage the visit to the host city was put in operation?
	3.1.2. National tourists and local habitants (national sphere) relationship	A data collection about the expectations, perceptions and motivations regarding the domestic tourists was performed? A communication program to monitor the implementation of the

		intervention plan, mobilization and support public engagement was put into operation?
3.2. Suppliers and/or partners relationship	3.2.1. Relationship within government bodies	A formal process was defined and implemented for government bodies' participation in the information exchange, transparency of purposes and alignment of objectives and actions?
	3.2.2. Relationship with funding and/or development agencies	A data collection about the existing fund lines was performed for purpose alignment? Was there a formal process to engage funding and/or development agencies in the formulation and implementation of the strategy?
	3.2.3. Relationship with industry organizations and business associations	A data collection about the expectations, perceptions, needs and motivations regarding the industry organizations was performed? A communication program to monitor the implementation of the intervention plan, mobilization and support the enterprises engagement was put into operation? Was there a formal process existed to engage the industry enterprises in the formulation and implementation the strategy?
3.3. Host city brand / reputation / identity perception	3.3.1. National sphere	The investment in the city's institutional image building/dissemination in the national sphere was satisfactory? Were there positive mentions in spontaneous media? Was there participation in relevant industry fairs and exhibitions? Is there a website and/or other kind of media for the improvements' disclosure and action plan's follow-up?
	3.3.2. International sphere	The investment in the city's institutional image building/dissemination in the international level was satisfactory? Were there positive mentions in spontaneous media? Was there participation in international relevant industry fairs and exhibitions? Is there a website and/or other kind of media for the improvements' disclosure and action plan's follow-up in foreign languages?

	3.3.3. Communication strategy (Plan)	An efficient mechanism to monitor the industry environment was used? A well-structured process of strategic formulation, with the support of qualified external consultants and involving industry key stakeholders, was used? Was the plan well-advertised in a regular way?
3.4. Interaction networks	3.4.1. Service/product development potential	Was there stimulus for building competitive networks in order to create new products and services, in a coordinated way among partners, suppliers, customers and/or end users?
	3.4.2. Industry development potential	Was there stimulus for building interaction networks in order to explore new markets?
	3.4.3. Degree of network system articulation and governance	Do the interaction networks contribute to partners' growth and development? Can the partners appropriate themselves the network's knowledge? Can the partners appropriate themselves the network's gains? Have the networks a shared vision, respect for partners and governance principles? Is the intervention plan managers active on these networks?
4.1. Corporate governance system	4.1.1. Degree of transparent communications for the society	Are the relevant information about the progress of the intervention plan, which may impact on economic exploitation, regularly and clearly published, not allowing gains due to insider information's?
	4.1.2. Degree of external controlling / accounting by an independent board	Is there an external control/accounting board, not subordinate to the executive offices? The control/accounting board is composed by independent individuals?
	4.1.3. Degree of social responsibility	Is there a formal social responsibility policy related to the project?
	4.1.4. Degree of environmental responsibility	Is there a formal environmental responsibility policy related to the project?
	4.1.5. Degree of professional management	Is there a clear system of responsibilities' delegation? The project activities are subject to some method of control?
4.2. Administrative systems	4.2.1. Maturity of quality and process management and/or certification	The intervention plan activities were subject to certifications or quality

		and process management (BPM, CMM, PMI, ISO, etc.)?
	4.2.2. Maturity of management systems (ERPs)	Any kind of management system compatible with the needs was put into operation?
	4.2.3. Maturity of performance assessment / operational efficiency systems	An integrated operational process (as a BSC), in order to maximize the operational efficiency and performance assessment, was put into operation?
	4.2.4. Maturity of the operational risk mapping and follow-up	A system for operational risks' mapping, assessment and following-up was put into operation?
	4.2.5. Maturity of culture and rationality agreement process	A process to deal with conflicts of Interests, different values and rationalities (ways of doing or thinking), relative to the large number of stakeholders involved, was put in place?
5.1. Managers and decision makers (strategic level)	5.1.1. Human resources adequacy regarding the mega event project objectives	Are the managers and decision makers aligned and qualified to conduct the action plan, regarding the project vision and objectives?
	5.1.2. Training and competence management	Are there competence management programs to identify gaps and improve the managers and decision makers' performance?
	5.1.3. Motivation and Commitment to Results	Is there a process of setting goals, stimuli application and individual performance measurement? Are the managers and decision makers committed to the action plan?
5.2. Operators (operational level)	5.2.1. Human resources adequacy regarding the interventions objectives	Is there a formal process to involve the operators in the alignment and implementation of the strategy? Are the operators qualified to achieve the strategic objectives?
	5.2.2. Training and competence management	Are there programs to improve the functional performance of the operators? Are the programs fits the needs of customers and end users? Are the best talents identified and prepared for promotions?
	5.2.3. Motivation and Commitment to Results	Is there a process of setting goals, stimuli application and individual performance measurement? Are the operators committed to the action plan?

To guide the stakeholder within the interview, we developed 42 question sheets (annex 3). Each question sheet identifies the intangible capital dimension, the asset and/or competence and the indicator under measurement; presents the impact question,

the impact evaluation matrix, the confirmation question, and provide some directions in regard to the indicator.

The stakeholders may also indicate the degree of relative importance of each intangible capital dimension, asset and indicator. We asked it in order to assess how the mega event project performance is really expected and evaluated by the stakeholders, i.e. to identify the ideal competitive positioning according his/her point of view. For accomplish such evaluation, we also developed a weight assignment matrix (figure 15), wherein the stakeholders was demanded to distribute a percentile scale weight to the intangible capital dimensions regarding it others. The weight/importance distribution was also performed with the assets within each capital dimension, and with the indicators within each asset and/or competence, as show in the figure 15.

With the accomplishment of the stages presented above, we are apt to calculate the three ME-I^2 Model outcomes: a) An index of the relative value creation potential (degree of importance) for each intangible capital dimension; b) Performance Ratings for the mega event project intervention (in the current case study, from the FIFA 2014 World Cup intervention plan on the Rio de Janeiro city Tourism industry) in a overall manner, and in respect to each capital dimensions and assets; and c) The Dynamic Value of the Intangible Capital, when we link the Performance Ratings with the financial value of the assets, using the interventions expenditures as a proxy. The motivations to define this holistic view and use a subjective (qualitative) judgment to determine composite indexes that may be used for objective comparisons, as our three model outcomes, arises from our performance objective and standards (described in the step two of our DSR process cycle) and the recommendations of EDVINSSON; MALONE (1999).

Capitais Intangíveis	Pesos	Ativos e Competências	Pesos	Indicadores	Pesos
1. Estratégico	50%	1.1 Competência em monitorar o mercado	80%	1.1.1 Processos de captura da informação	33%
				1.1.2 Processamento / Transformação da informação em conhecimento	33%
				1.1.3 Processos de disseminação do conhecimento	34%
				TOTAL	100%
		1.2 Competência em formular, implementar e acompanhar a estratégia	20%	1.2.1 Processos de formulação da estratégia	50%
				1.2.2 Processos de implantação da estratégia e/ou plano de ação derivado	25%
				1.2.3 Processos de monitoramento da estratégia (resultados e consequências)	25%
				TOTAL	100%
		TOTAL	100%		
2. Ecossistema	10%	2.1 Sistema de financiamento	5%	2.1.1 Grau de abrangência, adequação e acessibilidade do sistema de financiamento	100%
		2.2 Ambiente regulatório (Aspectos institucionais)	40%	2.2.1 Nível de regulação, estabilidade operacional e investimento de longo prazo do setor	100%
		2.3 Ambiente de Inovação (P&D) e empreendedorismo	5%	2.3.1 Nível de maturidade do aparato de inovação	30%
				2.3.2 Capacidade de inovação	40%
				2.3.3 Programas de incentivo ao empreendedorismo e para a criação de novos negócios	30%
				TOTAL	100%
		2.4 Infra-estrutura e logística	10%	2.4.1 Física (transportes, segurança, energia e cadeia de suprimentos)	30%
				2.4.2 Tecnologias da informação e comunicação (TICs)	40%
				2.4.3. Serviço de informação e suporte aos turistas	30%
				TOTAL	100%
		2.5. Incentivos ao desenvolvimento do setor/ industria	40%	2.5.1. Nível de desenvolvimento e pespectiva de crescimento do setor/industria	100%
		TOTAL	100%		
3. Relacionamento	10%	3.1. Relação com os clientes e/ ou usuários finais	25%	3.1.1. Relação com turistas estrangeiros (esfera internacional)	50%
				3.1.2. Relação com turistas nacionais e habitantes locais (esfera nacional)	50%
				TOTAL	100%
		3.2. Relação com fornecedores e/ou parceiros	25%	3.2.1. Relação entre entes governamentais	40%
				3.2.2. Relação com instituições de fomento, financiamento e/ou desenvolvimento	30%
				3.2.3. Relação com empresas do setor / Associações setoriais	30%
				TOTAL	100%
		3.3. Marca / Reputação / Percepção da identidade	25%	3.3.1. Esfera nacional	35%
				3.3.2. Esfera internacional	35%
				3.3.3. Estratégia (Plano) de comunicação	30%
				TOTAL	100%

		3.4. Redes de interação	25%	3.4.1. Potencial de desenvolvimento de produtos, serviços e processos	33%
				3.4.2. Potencial de desenvolvimento do setor	33%
				3.4.3. Grau de articulação e governança da rede	34%
				TOTAL	100%
		TOTAL	100%		
4. Estrutural	20%	4.1. Sistema de governança corporativa	80%	4.1.1. Transparência das informações para a sociedade	20%
				4.1.2. Controle/Auditoria externo da gestão / tomada de decisão	20%
				4.1.3. Responsabilidade social	20%
				4.1.4. Responsabilidade ambiental	20%
				4.1.5. Profissionalização da gestão	20%
				TOTAL	100%
		4.2. Sistemas administrativos	20%	4.2.1. Gestão / certificação de processos e da qualidade	18%
				4.2.2. Sistemas de gestão (ERPs)	17%
				4.2.3. Eficiência operacional / Avaliação do desempenho	17%
				4.2.4. Avaliação do risco operacional	18%
				4.2.5. Cultura e lógica de racionalidade	30%
				TOTAL	100%
		TOTAL	100%		
5. Humano	10%	5.1. Gestores e tomadores de decisão (atuação no nível estratégico das ações de intervenção estrutural na área do turismo)	80%	5.1.1. Adequação dos recursos humanos em relação aos objetivos das intervenções no setor do turismo	30%
				5.1.2. Capacitação e gestão de competências	30%
				5.1.3. Motivação e comprometimento com resultados	40%
				TOTAL	100%
		5.2 Operadores / executores (não atuam no nível estratégico, mas sim operacional das ações de intervenção estrutural na área do turismo)	20%	5.2.1. Adequação dos recursos humanos em relação aos objetivos das intervenções no setor do turismo	30%
				5.2.2. Capacitação e gestão de competencias	40%
				5.2.3. Motivação e comprometimento com resultados	30%
				TOTAL	100%
		TOTAL	100%		
TOTAL	100%				

Figure 15 - Weight assignment matrix

BONTIS (2001) suggested that researchers must move from perceptual measures in isolated cases to a large-scale approach with objective measure. But, he didn't develop the argument explaining what kind of objective measures might be collected. In addition, we are still skeptical about the use of only objective measures to evaluate a subjective construct as the knowledge-based capital, as debated in section 2.3.3. In contrast, EDVINSSON; MALONE (1999) reported as a main lesson learned from the development of the Skandia Navigator that it is no longer enough sufficient make an inventory of the organization's intangible assets in an writing basis document to be attached to the financial reports. Therefore, they recommend perform the tracking of the intangibles in numbers. Notwithstanding the vision that the IC deals with discovering hidden and subjective realities, objective numbers are the business international language. Thus, their experience shows that an IC report presented in 'numbers' tends to present more concrete and dynamic information, albeit based on subjective data.

The index of the relative value creation potential (degree of importance) represents the ideal competitive positioning balance for the tourism intervention plan, according the point of view of the stakeholders. Such approach allowed us to measure the expectation

of the sample, and of each stakeholder group individually, regarding to their investment priorities according to their vision of success. It is an important information to help establish a strategic vision for the host city exploiting the impacts and legacies expectation from the mega event project. According our hypothesis, one possible cause for the large number of disappointing results (from mega projects) is due to the detachment between the significance of the outcomes – impacts – delivered and the benefits – value creation – expected by the large number of stakeholders and general audience. Thus, the analysis of the value creation potential can provide interesting insights about the stakeholders' point of view and expectations. The index of the relative value creation potential for the intangible capital dimensions doesn't require special calculation. It reflects the distribution of the percentile scale weight among the intangible capital dimensions. Thus, in order to identify it, the interviewers had to ask the stakeholders to indicate, in a percentile scale, the relative value creation potential (degree of importance) for each intangible capital dimension.

The performance ratings for the mega event project intervention represent the stakeholders' perceptions about the performance of the effects/impacts of the Tourism intervention plan on the Rio de Janeiro city. A performance rating can be calculated for each indicator with the use of the weighted score. The weighted score was calculated from the product of the impact score (from the Impact evaluation matrix – table 6) and the relative value creation potential (from the weight assignment matrix – figure 15) assigned by the stakeholder to the same indicator. Such approach was put in place to make it possible taking into account each stakeholder strategic priorities on the performance calculation and comparing the effect/impact between different stakeholders visions. The performance rating was finally calculated by the difference (in %) between the weighted score and the maximum possible score (+2, see table 6), which reflect the maximum theoretical potential for improvement, the ideal mega event project pay-off.

For example, if a stakeholder has the perception that the impact on a particular indicator reached its maximum benefit (improvement) theoretical potential, the performance rating for the same indicator would be +100%. On the other hand, if a stakeholder has the perception that the impact on a particular indicator reached its maximum downside (worsening) theoretical potential, the performance rating would be -100%. The performance rating from the assets is calculated by the arithmetic average of the performance ratings of its indicators. The performance rating from the intangible capital dimensions was calculated by the sum of its assets. The same approach was applied to calculate the overall performance rating, i.e. the sum of all intangible capital dimensions. The figure 16 illustrate, for example, the case of a stakeholder, who ranked

the overall performance rating as +30%, reflecting his perception that the Tourism intervention plan achieved 30% of their potential for improvement.

Capitais Intangíveis	Pesos	Ativos e Competências	Pesos	Indicadores	Pesos	Peso Global	Notas	Nota ponderada	Nota max possível (+2)	Rating
1. Estratégico	50%	1.1 Competência em monitorar o mercado	80%	1.1.1 Processos de captura da informação	33%	13,2%	1,5	0,198	0,264	75%
				1.1.2 Processamento / Transformação da informação em conhecimento	33%	13,2%	0,0	0,000	0,264	0%
				1.1.3 Processos de disseminação do conhecimento	34%	13,6%	1,0	0,136	0,272	50%
				TOTAL	100%	40,0%	2,5	0,334	0,800	42%
		1.2 Competência em formular, implementar e acompanhar a estratégia	20%	1.2.1 Processos de formulação da estratégia	50%	5,0%	1,0	0,050	0,100	50%
				1.2.2 Processos de implantação da estratégia e/ou plano de ação derivado	25%	2,5%	0,0	0,000	0,050	0%
				1.2.3 Processos de monitoramento da estratégia (resultados e consequências)	25%	2,5%	0,0	0,000	0,050	0%
				TOTAL	100%	10,0%	1,0	0,050	0,200	25%
		TOTAL	100%				3,5	0,384	1,000	38%
4. Estrutural	20%	4.1. Sistema de governança corporativa	80%	4.1.1. Transparência das informações para a sociedade	20%	3,2%	0,5	0,016	0,064	25%
				4.1.2. Controle/Auditoria externo da gestão / tomada de decisão	20%	3,2%	0,0	0,000	0,064	0%
				4.1.3. Responsabilidade social	20%	3,2%	0,0	0,000	0,064	0%
				4.1.4. Responsabilidade ambiental	20%	3,2%	0,0	0,000	0,064	0%
				4.1.5. Profissionalização da gestão	20%	3,2%	0,0	0,000	0,064	0%
				TOTAL	100%	16,0%	0,5	0,016	0,320	5%
		4.2. Sistemas administrativos	20%	4.2.1. Gestão / certificação de processos e da qualidade	18%	0,7%	0,0	0,000	0,014	0%
				4.2.2. Sistemas de gestão (ERPs)	17%	0,7%	0,0	0,000	0,014	0%
				4.2.3. Eficiência operacional / Avaliação do desempenho	17%	0,7%	0,0	0,000	0,014	0%
				4.2.4. Avaliação do risco operacional	18%	0,7%	0,0	0,000	0,014	0%
				4.2.5. Cultura e lógica de racionalidade	30%	1,2%	1,0	0,012	0,024	50%
				TOTAL	100%	4,0%	1,0	0,012	0,080	15%
		TOTAL	100%				7,0	0,063	0,358	18%
5. Humano	10%	5.1. Gestores e tomadores de decisão (atuação no nível estratégico das ações de intervenção estrutural na área do turismo)	80%	5.1.1. Adequação dos recursos humanos em relação aos objetivos das intervenções no setor do turismo	30%	2,4%	0,5	0,012	0,048	25%
				5.1.2. Capacitação e gestão de competências	30%	2,4%	0,0	0,000	0,048	0%
				5.1.3. Motivação e comprometimento com resultados	40%	3,2%	0,0	0,000	0,064	0%
				TOTAL	100%	8,0%	0,5	0,012	0,160	8%
		5.2 Operadores / executores (não atuam no nível estratégico, mas sim operacional das ações de intervenção estrutural na área do turismo)	20%	5.2.1. Adequação dos recursos humanos em relação aos objetivos das intervenções no setor do turismo	30%	0,6%	-1,0	-0,006	0,012	-50%
				5.2.2. Capacitação e gestão de competencias	40%	0,8%	0,0	0,000	0,016	0%
				5.2.3. Motivação e comprometimento com resultados	30%	0,6%	1,0	0,006	0,012	50%
				TOTAL	100%	2,0%	0,0	0,000	0,040	0%
		TOTAL	100%				7,5	0,075	0,571	13%
TOTAL	100%					100%	23,0	0,602	2,000	30%

Figure 16 - Performance rating calculation matrix

Finally, the Dynamic Value of the Intangible Capital was calculated following the recommendations of BOUNFOUR (2003b), i.e. we collected the data about the Tourism intervention plan budget and get the Dynamic Value by the product between the performance ratings and the interventions expenditures, as a proxy of the financial value of the assets.

The general procedure and practice rules to run the ME-I^2 Model encompasses five activities: a) to identify the stakeholders to be interviewed, b) to contact them, c) to execute the interviews, d) to treat the data collected, and e) to present the data results. These activities can be organized in three stages: preparation, data collection and data analysis and visualization. The first stage aim is to prepare and organize the interviews. The identification of the stakeholders to be interviewed can be done with basis on a stakeholder-mapping process. In the current case study, we developed a matrix in which we could identify the stakeholders, classify its role in four non-exclusive categories (decision-maker, management staff, directly influenced and indirectly influenced) and from which group it takes part (internal or external), keep their contacts updated, and identify the different effects on the social environment they can influence. The stakeholder-mapping matrix also allowed us to keep on track the contacts made with the stakeholders during the negotiations to run the interviews. Before the interviews, we pre-

prepared a set of the 42 question sheets and a spreadsheet to help organize the data and calculate the model outcomes.

The second stage is to execute the interviews to collect data. In this regard, we suggest following the same guidelines we did: 1) At the beginning of the meeting, the interviewer presented the focus of the case study, a brief explanation about the objectives of the tourism intervention plan and its initiatives, and about the ME-I^2 model. 2) Next, the stakeholders filled a research informed consent declaration. 3) The interviewer begun the data collection by reading the question sheets (annex 3) with the stakeholder, one for each indicator. After the reading and eventual explanations, the interviewer asked the stakeholder to 4) assign the correspondent note/score according his/her perception for each indicator at the Impact evaluation matrix, and 5) provide an explanation for understanding the foundations of his/her perception. Next, the steps 3 to 5 were repeated for each of the 42 indicators. At the end of the interview, 6) the stakeholders may indicate the degree of relative importance for each intangible capital dimension, asset/competence and indicator from assignment of weights, filling the Weight assignment matrix (figure 15).

With the help of the spreadsheet prepared on the stage one and following such guidelines, it was possible to proceed to the third and last stage, the data analysis and visualization. The data collected during the interviews permitted us to calculate two ME-I^2 Model outcomes: a) the index of the relative value creation potential of each intellectual capital dimension, and b) the performance ratings for the mega event project intervention on the Rio de Janeiro city Tourism industry, in a overall manner and in respect to each capital dimensions and assets. For the calculation of the Dynamic Value of the Intangible Capital we had to collect the data about the Tourism intervention plan budget, which came from the documental analysis executed in the first step of our DSR process cycle. In regard to the data visualization, we will present our proposition in the fourth step of the design cycle, in the next section.

As aforementioned, the three last steps of our DSR process cycle, related to the artifact evaluation, d) demonstration, e) evaluation, and f) communication are detailed on the next section (6.2) that deals with the model validation phase.

6.2. Model Validation

The model validation phase has as aim to raise evidence about the validity of the ME-I^2 Model's operational version for provide information for effective strategic management and decision-making to increase the likelihood of successful projects with

focus on inducing value creation (positive legacies), competitiveness and local development. The performance evaluation with focus on the intangibles is a paradigm change from those performed by the Brazilian Government only focused on monitoring the outputs of the mega event itself, some general tangible outcomes (such as financial impacts, employment rates, numbers of visiting tourists, income generation, etc.), and perceptions about the mega event in regard to the tourism related services. Following the DSR process proposed by PEFFERS et al. (2007), in the step four, the demonstration step, the researcher may demonstrate the use of the artifact to solve one or more instances of the specific research problem identified.

The specific research problem defined on the step one of our DSR process cycle was twofold: a) to measure the impacts regarding the intangible factors that can trigger the transformation of the 2014 FIFA World Cup achievements in positive tourism legacy for the host city, and b) to evaluate in which extend the Brazilian Government intervention plan achieved its strategic vision, according the expected changes in value creation potential envisioned by some stakeholders. Based on the recommendations of BEHN (2003), EZEMENARI et al. (1999) and PEFFERS et al. (2007), we demonstrate the use of the ME-I^2 Model in measuring and evaluating the expectations and perceptions of seven institutional stakeholders and two mega sport events specialists regarding the impacts' performance in a case study about the 2014 FIFA World Cup tourism intervention plan.

As the ME-I^2 Model should be able to deal with the aspirations of value creation (positive legacies), competitiveness and local development from the mega event project impacts, we decided looking for capture a macro perspective and avoid perceptions on an individualized subject level. Therefore, we decided that the interviews should be conducted with representative groups identified in the stakeholder-mapping matrix with major influence roles on the legacy development (future value-creation). According our perspective, they are the government bodies with directly involvement with the mega event project, development agencies, business and professionals (practitioners) associations from directly (tourism) and indirectly (non-tourism) impacted industries and consultants specialized in mega sports events.

As mentioned in the previous section, we designed a stakeholder-mapping matrix and used it as an orientation map to identify the possible stakeholders to be enrolled in the interviews. In the matrix we identified the key stakeholders involved, its role (divided in four non-exclusive groups: decision-maker, management staff, directly influenced and indirectly influenced) and the potential effects of the stakeholder influence concerning the building of positive legacies on the host city/region environment. The 32 institutional or specialist stakeholders identified were contacted by email with an invitation letter. The

invitation letter (annex 1) presented our research group, the research objectives, a brief explanation about the ME-I^2 Model and methods, the potential implications of our research, and invited the stakeholder to a personal meeting to proceed the interview. In addition to the email exchanges, when possible, some stakeholders were contacted by phone calls to try to create an engagement link with the research. As soon as possible after the agreement with each stakeholder, we started the rounds of interviews.

Despite of the 32 stakeholders contacted, only 11 (34%) confirmed the personal meetings. In average, the interviews lasted around two hours, with a maximum of two hours and a half. Due to schedule limitations, four of the 11 interviews had to be divided in two meetings. Unfortunately, in two cases from these four we could not finish the entire interview, and these two stakeholders was removed from the sample. Hence, we reached a total sample of nine stakeholders interviewed in a completely basis.

The sample of nine stakeholders was divided into two groups of analysis. One group, characterizing the three internal stakeholders, with members from the Rio de Janeiro Municipal Government, Rio de Janeiro State Government, and from the FIFA Local Organizing Committee, i.e., members that played the role of project decision-makers, managers, operators and/or direct participants on the mega event project interventions. And the other group, characterizing the six external stakeholders, comprised by members from two development agencies, one dedicated on business local development and other on entrepreneurship; two professional associations, one from the finance industry and other from capital markets; and two experts in mega sports events, one practitioner from a big international consulting group and one researcher from a prestigious Brazilian university research group about sport events.

The interviews took place according the ME-I^2 Model guidelines presented in the previous section. 1) Each interview started with a brief explanation about the strategic vision of the Brazilian Government for the 2014 FIFA World Cup, the objectives and lines of action of the Intervention Plan to the Tourism industry, the total projected budget to implement the intervention plan, the importance of establishing a strategic vision and performing an adequate planning and management of the impacts and legacies for the host city, and a general presentation about the ME-I^2 Model and the intangibles potential contribution. Next, the stakeholders was asked to fill and sign a research informed consent form (annex 2), according to the Brazilian rules to run research experiments with human beings.

After that, 2) both the participant and the interviewer read the question sheet (annex 3), one for each indicator. After eventual explanations, if needed, 3) the interviewer asked the stakeholder to assign the correspondent note/score according his/her perception for each indicator at the Impact evaluation matrix (table 6), and 4) to provide an explanation

about the foundations of his/her perception, according the questions from the table 7. Next, the steps 2 to 4 were repeated for each of the 42 indicators. At the end of the interview, 5) the stakeholders were asked to distribute, in a percentile scale, the degree of relative importance of each intangible capital dimension, asset/competence, and indicator, in a spreadsheet with the Weight assignment matrix (figure 15).

The accomplishment of the previous guidelines with each stakeholder and the access to the Tourist intervention plan budget, permit us to collect sufficient data to calculate the three ME-I^2 model outcomes: a) the index of the relative value creation potential for each intangible capital dimension, b) the performance ratings for the 2014 FIFA World Cup intervention plan on the Rio de Janeiro city Tourism industry, in a overall manner and in respect to each capital dimensions and assets, and c) the dynamic value of the intangible capital.

The index of the relative value creation potential represents the ideal competitive positioning balance for the tourism intervention plan according the point of view of the stakeholders. In order to identify it, the interviewers had to ask the stakeholders to indicate, in a percentile scale, the relative value creation potential (degree of importance) for each intangible capital dimension. Such approach allowed us to measure the expectation of each stakeholder individually, and of the sample as a whole, regarding to their investment priorities according to their vision of success.

The performance ratings represent a measure of the stakeholders' perceptions about the performance of the Tourism intervention plan in regard of its impacts. To carry out the measurement of the performance ratings, the note/score assigned by each stakeholder had to be weighted from the product of the impact score with the relative value creation potential for the same indicator (weighted score). Such approach was put in place to make it possible taking into account each stakeholder strategic priorities on the performance calculation, and comparing the effect/impact between different stakeholders visions. The performance rating was calculated by the difference (in %) between the weighted score and the maximum possible score, which reflect the maximum theoretical potential for improvement, i.e., the ideal 2014 FIFA World Cup tourism intervention plan pay-off (for a detailed explanation, see the example provided in the section 6.1).

Finally, the dynamic value of the intangible capital represents the link between the 2014 FIFA World Cup tourism intervention plan performance with the financial value of the intangibles assets, i.e. a coefficient of efficiency of the IC value. It was calculated by the product between the performance ratings and the Tourism intervention plan expenditures, as a proxy of the financial value of the assets, according the recommendations of BOUNFOUR (2003b). The data regarding the Tourism intervention

expenditures was collected from the 2014 FIFA World Cup budget and the performance rating from the interviews, according the aforementioned proceedings.

Regarding the results from the relative value creation potential (degree of importance), when we analyze both groups together the human capital get the highest index of the relative value creation potential, i.e. it was the most valued dimension with 25% degree of importance (figure 17). In other words, a quarter of the overall model weight was assigned to the adequacy of the managers, decision makers and operators skills, abilities, proficiencies, knowledge, know-how, commitment, motivation, etc. Just after, on the second position emerged the strategic capital, i.e. the competence to monitor the external environment, and to formulate, implement and follow up the strategy, with 23,8% degree of importance.

On the third position, it emerged the structural capital, i.e. the set of administrative systems (represented by concepts, models, routines, procedures, processes, manuals, organizational structure, management tools, culture and rationality) and the corporate governance (regarding the attitude towards the transparency in communications, the social and environmental responsibilities, and the external control by a board with independent decision making), with 18,1% degree of importance. And, finally, in the two last positions, the ecosystem capital (set of intangible factors external to the mega project, concerning the business environment where it operates) computed 16,9%, and the relationship capital (the networking with customers, end users, suppliers, partners, and the identity / brand perception by the community) with 16,3% degree of importance.

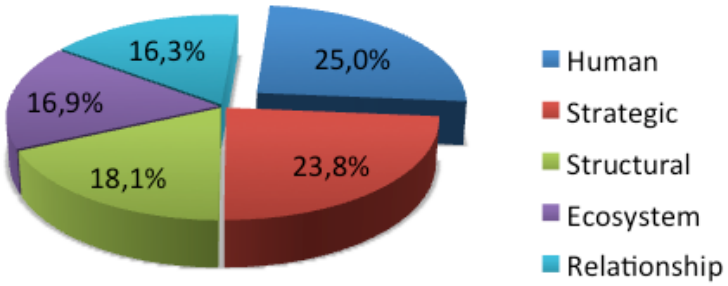


Figure 17 - The relative value creation potential (degree of importance) of each intangible capital dimension according both groups of stakeholders

Comparing the results between the two groups (table 8), we observed no statistical difference in any intangible capital dimension (Student t test, 95% confidence interval) for this ME-I^2 Model outcome. However, the human capital had a strong emphasis in the vision of the internal stakeholders, reaching 35,0% value creation potential. Meanwhile, for the external stakeholders, the human capital emerged as the second most valued dimension with 21,7% value creation potential, just after the strategic capital. This fact

heavily influenced the compiled results and contributed to the major relative difference between the two groups.

Table 8 - Relative value creation potential (degree of importance) of each intangible capital dimension according the stakeholder group

Intangible Capital Dimensions	Internal stakeholders mean (±sd)	Position	External stakeholders mean (±sd)	Position
Human	35,0% (0,07)	1	21,7% (0,08)	2
Strategic	15,0% (0,00)	3	26,7% (0,13)	1
Structural	22,5% (0,11)	2	16,7% (0,06)	4
Ecosystem	12,5% (0,14)	4	18,3% (0,05)	3
Relationship	15,0% (0,00)	3	16,7% (0,04)	4

No significant difference between groups (Student t test, 95% confidence interval)

The strategic capital was the most valued dimension for the external stakeholders, with 26,7% degree of importance. For the internal stakeholders, meanwhile, it appeared only in the third place, with the same relative value creation potential of the relationship capital, both dimensions with 15,0% degree of importance. This behavior was expected, because of the orientation to the market and strategic issues that generally came from the private sector. As noted by PRIEMUS et al. (2008) there are, in theory, two different roles played on the mega projects by the public and private sectors. While the former safeguards the citizenship values, the latter ensures a better market orientation, more dynamism and flexibility.

The structural capital, ranked as the second most important dimension for the internal stakeholders with 22,5% degree of importance, stood behind more than 10 points from the human capital, the most valued by this group. For the external stakeholders, the structural capital was ranked only on the fourth position, with the same relative value creation potential of the relationship capital, both dimensions with 16,7% degree of importance. Such difference was also expected, based on the rationality of the internal group direct concern about responsibility and accountability, and its key role in developing the corporate governance and administrative systems, the assets of this dimension.

The ecosystem capital, which describes the external factors related to the business environment where the mega event project operates, intriguingly, was evaluated lower than we expected. On the point of view of the internal stakeholders, the ecosystem capital was ranked on the last position, with 12,5% degree of importance. For the

external stakeholders, this dimension was ranked on third position with 18,3% degree of importance. We expected a greater attention to such dimension because it embraces the set of external factors to the project, i.e. the impacts and legacies of the mega event project, which can be positively affected by the tourist intervention plan and the FIFA World Cup Project as a whole. This set of external factors is related to the financing system, the regulatory environment, the innovation (R&D) and entrepreneurship environment, the quality and adequacy of infrastructure and logistics, and the incentives for the sector development. All improvements on these factors can generate positive effects after the end of the mega event yielding the main potential legacies to the sector. A possible reason for this result can be a potential bias come from the non-inclusion of the tourism sector stakeholders in the case study sample, due to limitations regarding a lack of adherence to the study invitation and sample mortality.

The mega event literature (CLARK, 2008; PREUSS, 2007) raises as an essential task a proper planning of the potential positive effects for a better exploitation of the mega event project impacts and great support to the host city/region sustainable economic development. We tried to map the intervening factors concerning these two mega event project positive legacies (the strategic planning for the host city and the potential positive effects on economic development) on the ME-I^2 Model by measuring the expectations and perceptions about the impacts performance on the intangible assets incorporated, respectively, on the strategic and ecosystem dimensions.

The results captured in each group (table 8) leads us to infer that the expectations around the tourism intervention plan focused more on the mega project internal issues, concerning the mega event execution itself (human and structural dimensions for the internal stakeholders, and strategic and human dimensions for the external stakeholders), than on the potential external legacies for the tourist sector (ecosystem dimension).

With basis on this expectation, mainly from the internal stakeholder point of view, we guess that it will be difficult to the tourism intervention plan support its third objective, the transformation of the 2014 FIFA World Cup achievements in positive legacy for the country after the mega event (MINISTÉRIO_DO_ESPORTE, 2012a). The focus more concentrated on the development of the internal project intangible assets than the external ones, can lead to a poor overall performance perception of the mega event project in generating positive impacts and legacies.

The results also indicated, a greater heterogeneity on the relative value creation potential distribution among the intangible capital dimensions on the perspective of the external group comparing with the internal. In the former the difference between the first ranked dimension (strategic capital, with 26,7%) and the last (structural and relationship

capitals, with 16,7%) was exactly 10 points. Such difference is less than the half of the difference found on the internal stakeholders, 22,5 points between human capital (35%) and ecosystem capital (12,5%). One possible explanation for this behavior is the different interests and expectations that came from the different (six) organizations enrolled on the external group.

As we already identified in the section 2.1.2, with basis on FRICK (2008) findings, mega projects usually have a huge number of stakeholders with different intrinsic interests, rationales, cultures, visions and expected benefits (value-creation drivers). These results also confirm a certain multiplicity of opinions, agreeing with the BRUIJN; LEIJTEN (2008) theory about complexity with regard to social iteration within the different stakeholders involved. At the same time that such multiplicity of expectation increases the difficulty on the management effort, it can also enrich the police and innovative environments of the project. Unfortunately, the data collected does not allow us to ensure that this fact reflects a more aligned view from one group over the other or only a wide distribution arising from the different views put together. To raise the level of evidence on this subject we have to increase the number of interviews into each group.

Regarding the stakeholders' perceptions about the impacts of the 2014 FIFA World Cup intervention's regarding the tourism industry at Rio de Janeiro, the overall performance rating including both groups was 11,5, reflecting that the tourism intervention plan achieved 11,5% of its potential for improvement. This result came in line with we previously expected, with basis on the narratives collected during the interviews. Such overall performance rating stands inside the first quartile of improvement, reflecting an overall perception of a slightly positive impact of the mega event project intervention on the intangibles. This result was strongly influenced by an adverse perception of the external stakeholders. They had a slightly positive perception tending to neutral impact, achieving only 2,5% of its potential, inside the first quartile of improvement. The internal stakeholders, on the other hand, perceived a moderately positive impact, with 38,5% of its potential, standing into the second quartile of improvement.

The difference between the perceptions of the two groups was statistically confirmed (table 9), fact we also previously expected. The reasons for such difference on the overall performance perception between the two groups can be explained by several potential factors, such as a) a deficient communication about the mega event project achievements provided by the internal group; b) the negative opinions transported via the mass media, c) the general negative felling that dominated the public opinion before the 2014 FIFA World Cup, and d) a poor external stakeholders knowledge about the preparations efforts and initiatives (ALTSHULER; LUBEROFF, 2003; BRUIJN;

LEIJTEN, 2008; KÖNECKE; SCHUBERT, 2014; MÜLLER, 2012; ZOUAIN et al., 2014). In our opinion, a deficient communication can lead to a poor knowledge about the initiatives and, consequently, to a general negative felling and antagonism. An evidence of such fact is the perception regarding the performance of the relationship capital dimension evaluated in the last position by the internal group (table 10), and of their asset 'Relationship with suppliers and/or partners', evaluated by the internal group in the lower quartile of improvement and by the external group in the first quartile of worsening, i.e. a negative impact (table 11).

Table 9 - Overall Performance Ratings for the FIFA 2014 World Cup interventions on the Rio de Janeiro tourism industry

Overall Performance Rating	Both groups mean (±sd)	Internal stakeholders mean (±sd)	External stakeholders mean (±sd)	Diff. between groups (Student's t-Test)
	11,5% (0,32)	38,5% (0,08)	2,5% (0,32)	p<0,05

The performance ratings for the Tourism intervention plan regarding the intangible capital dimensions can be seen in table 10. The results are presented in a descending order, from the highest to the lowest score according the compiled (both groups) results. Interesting to note that, the ecosystem capital, evaluated at the lowest level of relative value creation potential (18,1% degree of importance) for both groups, i.e. lesser potential for value creation, emerged as the main source for improvement. The ecosystem performance rating for both groups, reached 24,0% of its potential, almost at the second quartile of improvement.

Comparing the performance ratings for each group separately, this behavior was similar. The ecosystem capital dimension appeared as the top performance rating in both groups. While the internal stakeholders perceived an improvement of 46,5% of its potential (considered moderately positive, at the top of the second quartile), for the external stakeholders the perception was lower, reaching 16,5% of its potential (considered slightly positive, at the half of the first quartile). However, it was not identified a statistically difference (Student t test, 95% confidence interval) between the groups perception (table 10). The main contributions to these positive perception were due to the improvements in the assets 'Incentives to the sector/industry development' and 'Infrastructure and logistics'. The Incentives to the sector/industry development was evaluated with a rating of 75,0% and 41,7% of their potential, respectively by the internal and external groups, and the Infrastructure and logistics was evaluated with a rating of 63,0% and 29,7% of their potential, respectively by the internal and external groups (table

11). Both assets had had a largely positive perception (on the third quartile) by the internal group and a moderately positive perception (on second quartile) by the external group.

Table 10 - Performance Ratings for the FIFA 2014 World Cup interventions on the Rio de Janeiro tourism industry regarding the intangible capital dimensions

Intangible Capital Performance Ratings	Both groups mean (±sd)	Internal stakeholders mean (±sd)	External stakeholders mean (±sd)	Diff. between groups (Student's t-Test)
Ecosystem	24,0% (0,49)	46,5% (0,02)	16,5% (0,56)	NS
Relationship	19,6% (0,34)	37,5% (0,06)	13,7% (0,38)	NS
Strategic	17,1% (0,30)	44,0% (0,27)	8,2% (0,27)	NS
Structural	15,9% (0,27)	43,0% (0,01)	6,8% (0,26)	p<0,05
Human	8,6% (0,35)	41,0% (0,07)	-2,2% (0,34)	p<0,05

Following the same reverse trend, the human capital dimension, evaluated as the highest value creation potential (25% degree of importance) by both groups, reached the lowest performance rating. It achieved 8,6% of its potential, at the first quartile of improvement, trending for the neutral impact (table 10). The human capital was characterized as the human resources adequacy regarding the mega event project objectives, the training and competence's management, and the motivation and commitment to results regarding the managers and decision makers (strategic level) and the operators (operational level). When we compare the results between the internal and external stakeholders' groups, we found statistically difference between the perceptions on this dimension (table 10). While the internal stakeholders evaluated this item moderately positive, with a performance rating of 41,0% of its potential (almost at the top of the second quartile of improvement), we noted a slightly negative perception by the external stakeholders, whom evaluated negatively this dimension achieving a performance rating of -2,2% of its potential. Their perception tended for the neutral impact, but on the downside perspective (table 10).

From the side of the internal group, the main contributions to these perceptions were a performance rating of 57,5% of its potential (at the third quartile of improvement) for the 'asset' operators, considering largely positive, and a performance rating of 15,0% of its potential (at the first quartile of improvement) for the 'asset' managers and decision makers, considering slightly positive (table 11). From the perspective of the external group, the main contributions were a performance rating of -15,0% of its potential (at the first quartile of worsening) for the 'asset' operators, and a performance rating of -15,3%

of its potential (also at the first quartile of worsening) for the ‘asset’ managers and decision makers, both considering slightly negative (table 11). Noteworthy, when we analyzed the individual data from the external group, we found an outlier. The perceptions of this outlier regarding the impacts on human capital dimension were strongly negative. If we remove their perceptions from the sample, the performance rating for the ‘asset’ operators reaches 2,0% of its potential instead of -15,0%, and the performance rating for the ‘asset’ managers and decision makers reaches 1,6% of its potential instead of -15,3%, both at the first quartile of improvement tending for the neutral impact. Consequently, the performance rating of the human capital dimension reaches 6,8% of its potential, instead of -2,2%, which nullifies the statistical difference found between the results from the groups (Student's t-Test, *p* level = 0,0570).

The other dimension with statistically difference on the perceptions between groups (Student's t-Test, 95% confidence interval) was the structural capital (table 10). In such dimension we can perceive the same behavior as in the human capital. The internal stakeholders evaluated it in a moderately positive manner with a performance rating of 43,0% of its potential (at the top of the second quartile of improvement), which was not followed by the external stakeholders. The latter evaluated the structural capital on the first quartile, with a slightly positive impact, with a performance rating of 6,8% of its potential, at the first quartile of improvement, tending for a neutral impact.

From the side of the internal group, the main contributions to these perceptions were a performance rating of 52,5% of its potential (at the third quartile of improvement) for the asset administrative systems, considering largely positive, and a performance rating of 15,5% of its potential (at the first quartile of improvement) for the asset corporate governance system, considering slightly positive (table 11). From the perspective of the external group, the main contributions were a performance rating of -6,0% of its potential (at the first quartile of worsening) for the asset administrative systems, and a performance rating of -18,0% of its potential (also at the first quartile of worsening) for the asset corporate governance system, both considering slightly negative (table 11).

On both the relationship capital and strategic capital dimensions, the stakeholders’ perception was similar to the ecosystem capital, with no statistically differences between groups’ perceptions. While the internal stakeholders presented a moderately positive view, respectively with performance ratings reaching 37,5% and 44% of their potentials, on the second quartile of improvement, the external stakeholders remained in a slightly positive view, respectively with performance ratings of 13,7% and 8,2% of their potentials, on the first quartile of improvement (table 10). The contributions to the relationship capital dimension perception were due to the improvements in the asset Customers and/or end users relationship that was evaluated with performance ratings of

45,0% (internal group) and 8,3% (external group) of its potential; to the improvements in the asset Interaction networks that was evaluated with performance ratings of 48,5% (internal group) and 31,3% (external group) of its potential; and to the improvements in the asset Host city brand, reputation and identity perceptions that was evaluated with performance ratings of 62,5% (internal group) and 21,8% (external group) of their potential (table 11). Such assets had a moderately and largely positive perception (on the second and third quartiles of improvement) by the internal group, and a slightly and moderately positive perception (on the first and second quartiles of improvement) by the external group. The only asset in the relationship capital dimension with a different perspective between the groups' perception (non statistically significant) was the Suppliers and/or partners relationship. The performance rating for this asset reached 8,5% (internal group) and -7,2% (external group) of its potential. Although the internal group has a slightly positive perception (on the first quartile of improvement) and the external group has a slightly negative perception (on the first quartile of worsening), both tended to the neutral impact (table 11).

For the strategic capital dimension, the contributions were due to the improvements in the asset Competence in formulating, implementing and following-up the strategy that was evaluated with performance rating, respectively for the internal and external group, of 35,0% (moderately positive, at the second quartile of improvement) and 0,8% of their potentials (tending to the neutral impact, at the first quartile of improvement). And also to the improvements in the asset Competence for monitoring the 'market' that was evaluated with performance rating of 57,5% (largely positive, at the third quartile of improvement) and 17,0% (slightly positive, at the first quartile of improvement) of their potentials, also respectively for the internal and external group (table 11). Noteworthy, beside the both (external and internal groups) performance ratings for the asset Competence for monitoring the 'market' demonstrated a positive perspective, we found a statistical difference (Student's t-Test, 95% confidence interval) between the groups' perception.

When we analyze the results of the intangible capital dimensions' performance ratings within each group individually (table 10), we can see the internal stakeholders' perceptions distributed within the second quartile of improvement, considered moderately positive, with performance ratings between 37,5% (relationship capital) and 46,5% (ecosystem capital) of their potential. As we have already expected, based on their participation in the Tourism interventions planning and/or execution, this group of stakeholders presented an (moderately) optimistic view regarding its impact. On the other hand, the external stakeholders had performance ratings between -2,2% (human

capital) and 16,5% (ecosystem capital), reflecting a slightly improvement potential perception tending to neutral impact.

There are a myriad of possible determinants for this perception' difference. However, with basis on our data we can ague that the main factor are: a) The focus more concentrated on the development of the internal project intangible assets (human, structural, and strategic) than the external ones (relationship and ecosystem). According the Relative value creation potential indexes (table 8) mainly from the internal stakeholders point of view, and despite of the no statistical difference between groups (Student t test, 95% confidence interval), this focus could lead to a poor overall performance perception of the mega event project in generating positive impacts and legacies by the external group (table 10 and 11); b) The different interests and expectations that came from the external stakeholders (table 8). Such heterogeneity can be the reflex of the different visions of the different institutions enrolled in the external group. If they would have had the same interest and expected value-creation drives, probably the difference between the first ranked dimension (strategic capital, with 26,7%) and the last (structural and relationship capitals, with 16,7%) would be high, as in the internal stakeholders group (human capital, with 35% vs. ecosystem capital, with 12,5%); c) The apparently deficient communication about the actions and interventions accomplished. This fact probably led to a poor external stakeholders knowledge about them, as we can perceive according the performance rating evaluation concerning the internal project intangible assets (human, structural, and strategic) by the external group (table 10). As we already mentioned, an evidence of such fact is the perception regarding the performance of the relationship capital dimension evaluated in the last position by the internal group (table 10), and of their asset ‘Relationship with suppliers and/or partners’, evaluated by the internal group in the lower quartile of improvement and by the external group in the first quartile of worsening, i.e. a negative impact (table 11). All these factors were confirmed as usual in mega projects, according our literature review chapter.

Concerning specifically the intangible assets, the performance ratings are distributed across three performance quartiles of improvement and one quartile of worsening, as shown in the graduated colored area of the table 11, ordered by the mean of compiled data (both groups). At the top category (composed by one out of 15 assets), the impact was considered largely positive and the performance rating reached 50,0% (Incentives to the sector/industry development, from the ecosystem capital) of its potential for improvement. At the second category of assets (four out of 15 assets) the performance ratings are considered moderately positive. In such group they fluctuated between 38,0% (Infrastructure and logistics, from the ecosystem capital) and 27,1% (Competence for

monitoring the 'market', from the strategic capital). At the third category (seven out of 15 assets) the performance ratings, considered slightly positive, ranged between 18,8% (Financing system, from the ecosystem capital) and 3,1% (Operators competencies, from the human capital) of its potential for improvement. Finally, the fourth group (comprising three out of 15 assets) had performances ratings perceived as slightly negative but tending for the neutral impact, ranging between -3,3% (Suppliers and/or partners' relationship, from the relationship capital) and -9,6% (corporate governance system, from the structural capital) of its potential for worsening.

Table 11 - Performance Ratings for the FIFA 2014 World Cup interventions on the Rio de Janeiro tourism industry regarding the intangible assets and competencies

Intangible Capital Dimensions	Assets and competencies	Both groups mean (±sd)	Internal stakeholders mean (±sd)	External stakeholders mean (±sd)	Diff. between groups (Student's t-Test)
Ecosystem	2.5. Incentives to the sector / industry development	50,0% (0,64)	75,0% (0,35)	41,7% (0,72)	NS
Ecosystem	2.4. Infrastructure and logistics	38,0% (0,58)	63,0% (0,17)	29,7% (0,66)	NS
Relationship	3.4. Interaction networks	35,6% (0,49)	48,5% (0,26)	31,3% (0,56)	NS
Relationship	3.3. Host city brand / reputation / identity perception	32,0% (0,39)	62,5% (0,53)	21,8% (0,32)	NS
Strategic	1.1. Competence for monitoring the 'market'	27,1% (0,28)	57,5% (0,04)	17,0% (0,25)	p<0,05
Ecosystem	2.1. Financing system	18,8% (0,44)	37,5% (0,53)	12,5% (0,44)	NS
Relationship	3.1. Customers and/or end users relationship	17,5% (0,53)	45,0% (0,28)	8,3% (0,58)	NS

Ecosystem	2.3. Innovation (R&D) and entrepreneurship environment	9,8% (0,49)	7,5% (0,04)	10,5% (0,58)	NS
Strategic	1.2. Competence in formulating, implementing and following-up the strategy	9,4% (0,37)	35,0% (0,42)	0,8% (0,35)	NS
Structural	4.2. Administrative systems	8,6% (0,49)	52,5% (0,11)	-6,0% (0,48)	p<0,05
Ecosystem	2.2. Regulatory environment	6,3% (0,5)	25,0% (0,35)	0,0% (0,55)	NS
Human	5.2. Operators	3,1% (0,6)	57,5% (0,32)	-15,0% (0,56)	NS
Relationship	3.2. Suppliers and/or partners relationship	-3,3% (0,5)	8,5% (0,12)	-7,2% (0,59)	NS
Human	5.1. Managers and decision makers	-7,8% (0,46)	15,0% (0,07)	-15,3% (0,51)	NS
Structural	4.1. Corporate governance system	-9,6% (0,39)	15,5% (0,22)	-18,0% (0,41)	NS

When we analyze the results of the performance ratings regarding the intangible assets within each group individually, we can notice that the internal stakeholders evaluated the impacts within the four quartiles of improvement, from considerably positive (one out of 15 assets), passing by largely positive (in five out of 15) and moderately positive (in five out of 15), until the category of slightly positive (in four out of 15). The top performance rating was 75,0% for the asset Incentives to the sector / industry development, from the ecosystem capital, and the bottom one was 7,5% for the asset Innovation (R&D) and entrepreneurship environment, also from the ecosystem capital.

The external stakeholder perceptions fluctuated within two quartiles of improvement and one quartile of worsening, from moderately positive impacts, at the second quartile of improvement (in three out of 15 assets), passing by the slightly positive (in seven out of 15 assets), until the slightly negative category, at the first quartile of worsening (in five

out of 15 assets). The performance ratings ranged from a top at 41,7% also for the asset 'Incentives to the sector / industry development', from the ecosystem capital, to a bottom at -18,0% for the asset 'Corporate governance system', from the structural capital.

Finally, the Dynamic Value of the Intangible Capital was calculated following the recommendations of BOUNFOUR (2003b). We collected the data about the Tourism intervention plan budget and get the Dynamic Value by the product between the overall performance rating and the interventions expenditures on the intangible assets, as a proxy of the financial value of such assets. According the data collected from the Brazilian Government (MINISTÉRIO_DO_ESPORTE, 2012a;2014), the total budget implemented in 2014 FIFA World Cup tourism intervention plan in Rio de Janeiro was R$ 18,9 million (from a total plan of R$ 28,9 million) for investments in the line of action tourist infrastructure, i.e. investment in (physical) tangible assets, and R$ 82,2 million for the lines of action services qualification, tourist information and support, i.e. investment in intangible assets. For the line of action regarding the tourism promotion the projected cost was about R$ 6,6 million, however there wasn't a specific budget for the Rio de Janeiro city, only on the national level, thus we didn't include it on the calculation. As the overall performance rating reached 11,5% of its potential of improvement, the Dynamic Value of the Intangible Capital was R$ 9,453 million (aka 0,115 x R$ 82,2 million).

According BOUNFOUR (2003a), the analysis of the evolution of the dynamic value for IC could be a good point for the measurement of goodwill over time. Once it combines the financial value of the intangibles assets with the performance of the 2014 FIFA World Cup tourism intervention plan, it represents a dynamic measure of the competitiveness. Hence, the regular monitoring of the dynamic value of the IC during the phases of the mega event project life cycle can help to raise evidence about the mega event project efficiency question, i.e. are the mega event project really producing its impacts in a cost-effective way?

In the step five of the DSR process proposed by PEFFERS et al. (2007), the evaluation step, the researcher may observe and measure how well the artifact supports a solution to the problem, i.e. he/she may test its quality and efficacy and identify if the artifact supports a solution for the problem identified or not. Following the MESSICK (1995) unified concept of validity, we theoretically evaluate the meaning and implications of the measurement providing a discussion to raise initial evidences concerning the power of the artifact developed. As, apparently, it is the first attempt to measure and evaluate the mega event projects impacts and legacies taking into account the traditional structures of measurement and evaluation of the intangible assets, we didn't identify any other operational model with the same performance objective, thus some aspect of the unified concept of validity were not tested empirically.

Thus, the model adequacy (or objectivity) was assessed taking into consideration the employment of the performance model to measure and evaluate the expectation and perceptions of the mega event project stakeholders about the impacts of the 2014 FIFA World Cup intervention's on the intangible capital regarding the tourism industry at Rio de Janeiro region. And the model appropriateness (or relevance) was assessed taking into consideration the power of the model in providing information for effective strategic management and decision-making directed to generate positive legacies, increasing the likelihood of successful projects, contributing for inducing value creation, competitiveness and local development. Therefore, we took into consideration the objectives and performance standards of the ME-I^2 Model (designed solution) and compared it with the results generated from its usage (presented above). However, as mentioned in the section 5.2, we will focus on evaluating the interpretations of the test scores, not the test itself (AERA, 1999).

The specific research problem defined on the step one of our DSR process cycle was twofold: a) to measure the impacts regarding the intangible factors that can trigger the transformation of the 2014 FIFA World Cup achievements in positive tourism legacy for the host city, and b) to evaluate in which extend the Brazilian Government intervention plan achieved its strategic vision (the mega event project legacy should go beyond the traditional promotion of the tourism. It also focus on provide the transformation of the achievements in positive legacy for the country), according the expected changes in value creation potential envisioned by some stakeholders.

The objective of the solution to face the research problem was to develop a new system application to deal with the mega event projects impact performance based on the intangibles, taking a holistic view and using a subjective (qualitative) judgment to determine composite indexes that may be used for objective comparisons. As a performance standard, this system should be able to measure and evaluate the perceptions of the mega event project stakeholders about the impacts of the 2014 FIFA World Cup intervention's on the intangible capital regarding the tourism industry at Rio de Janeiro region, and to provide information for an effective strategic management and decision-making directed to generate positive legacies. Therefore, the final result pursued is to assess how the mega event project performance is really expected, perceived, and evaluated by different stakeholders, based on the intangibles, and how can we increase the likelihood of successful projects, contributing for inducing value creation, competitiveness and local development.

Regarding the model adequacy (or objectivity), our first concern was with the boundaries and structure of the construct to be assessed, i.e. it is concerned to assess if the test items appear to be measuring the construct of interest. A construct can be

meant as a way to represent a phenomenon that we believe to exist but that we cannot observe directly. The process of scale development for assess a construct based on subjective phenomena such as quality of life, decision making and performance perception, is complex, especially with constructs inadequately defined or measured. Thus, the first step when developing a new scale is to define the construct of interest, because the most important guide to choosing items is the definition of the construct (MILLER, V. A. et al., 2009).

As mentioned in the step 4 of our DSR process cycle, our construct of interest was defined based on the literature review, the documental analysis and the preliminary semi-structured interview with the 2014 FIFA World Cup project managers and decision-makers. During the literature review, we presented our definition of impact (as a change that is a result or consequence of an action and/or an intervention), of legacy (all planned and unplanned, positive and negative, tangible and intangible structures created for and by a mega event that remain longer than the event itself), and the boundaries of the intangible capital measurement and evaluation with focus on a perspective of capturing and expressing the performance of a particular organization (in the current context a mega event project) in achieving its goals, according to a specific strategic vision. During the documental analysis we identified the strategic vision of the event and collected information regarding the planning and management of impacts and legacies from the 2014 FIFA World Cup project. And during the preliminary interviews, we validated some points concerning the strategic aspects for the event; gathered additional information about challenges, potential risks, opportunities, and gaps of the planning and management of the project; and understood the relevance and viability of its impacts and legacies.

During this diagnosis effort, it emerges the problem of how to measure the impacts regarding the intangible factors that can trigger the transformation of the 2014 FIFA World Cup achievements in positive tourism legacy for the host cities and evaluate in which extend the Brazilian Government intervention plan achieved its strategic vision according the expected changes in value creation potential envisioned by some stakeholders. We identified the needs and opportunities regarding a system to deal with the mega event projects impact performance based on the intangibles. With basis on the definitions of measurement and evaluation provided by BEHN (2003), BOUNFOUR (2003b) and EZEMENARI et al. (1999), we assumed that measurement is the act of identify if a given impact (among which the possible ones that can be generated for and by the project) emerge or not, whereas evaluation is the act of identify the subjective judgment about the value of the modification that the impact entails.

Hence, our construct of interest was objectively defined and delimited within a certain context: The perceptions of the mega event project stakeholders about the impacts of the 2014 FIFA World Cup interventions on the intangible capital regarding the tourism industry at Rio de Janeiro region that can generate positive legacies. And the final result of our evaluation should be to assess how the mega event project performance is really expected, perceived, and evaluated by different stakeholders.

Among the numerous strategies to deal with the measurement and evaluation of the intangibles, we decided to build a new system to measure and evaluate our construct of interest, the ME-I^2 Model, in order to suit our performance standards. Taking into account a holistic view and using a subjective (qualitative) judgment to determine composite indexes that may be used for objective comparisons, our new system should be able to measure and evaluate the perceptions of the mega event project stakeholders about the impacts of the 2014 FIFA World Cup interventions on the tourism industry at Rio de Janeiro region, and to provide information for an effective strategic management and decision-making directed to generate positive legacies. Such strategy was taken based on recommendations of BOUNFOUR (2003b) that the organization performance depends mainly on the quality of the intangible resources, and the capacity to maintain and develop them over the time. And also on the findings of the OECD (1996) that an unknown proportion of knowledge is implicit, uncodified and stored only in the minds of individuals.

During the design phase of the ME-I^2 Model, to operationalize the measurement of the construct and guarantee the content relevance, representativeness and technical quality, we built a conceptual framework and an experimental (operational) model on a mixed approach from merging two traditional approaches to the intangibles, the IC (intellectual capital) and the Dynamic (BOUNFOUR, 2003b). We took such strategy with basis in the work of BONTIS (2001) that raised the importance to the development of the intangibles field of building emerging measures on previous researchers' work. Hence, a common set of definitions and perspectives could be used.

The selection of the intangible capital dimensions, assets and indicators to build our mixed approach was performed according the recommendations of MILLER, V. A. et al. (2009). Thus, to meet our requirements and context, we begun from the original models, made some adaptations on the existing instruments, discarded some items when they bore no relevance to the construct measurement, and included some items we generated to assess the content that was not addressed. Hence, the ME-I^2 Model operational version comprehends five dimensions, 15 assets and/or competences and 42 indicators. The Intangible capital dimensions and assets were chosen due their role as main

sources of competitive advantage for the achievement of the mega event project as a catalyst for the host city/region local development and competitiveness.

The liaison between the intangible capital aspects chosen to take part of the ME-I^2 Model and their role as main sources of competitive advantage for the achievement of the mega event project as a catalyst for the host city/region local development and competitiveness is evidenced in the literature, among others factors, by: a) the existence of a positive and strong association between competitive advantage and intangible investments, levered by R&D, design, branding, quality of products, intelligence, knowledge, ICTs, use of data analytics and management practices, initial education and vocational training (BOUNFOUR, 2003b; OECD, 2013b); b) a positive relationship between business investment in intangible assets and macroeconomic growth, greater business and labor productivity, and income per capita (OECD, 2013b); c) Customers and business are continuously demanding increased complexity and perceive an added value in products and services that incorporates a higher percentage of innovation, technology and intelligence (CAVALCANTI; GOMES, 2000); d) the fragmentation and geographic dispersion of value chains, as well as the increased sophistication of production processes (OECD, 2013b); e) the strong emergence of the new information and communication technologies (ICTs) (BOUNFOUR; MIYAGAWA, 2015) ; f) the identified spillover effects from the intangible assets, i.e. the absorption of knowledge by people other than the originators, that occurs because knowledge is inexhaustible and cumulative good that is difficult to control, such as in design, brand equity, organizational capital and training to other parts of the economy (BASKERVILLE; DULIPOVICI, 2006; OECD, 2013b); g) the increased returns to scale in production due to the reduced, or even zero, marginal cost of some intangibles, which can also be reinforced by positive network externalities (BOUNFOUR, 2003b); and h) the added value and productivity of service activities that are primarily driven by the availability of educated and skilled human capital (OECD, 2006b).

Among the five intangible capital dimensions, the strategic, human, and structural are concerning the mega event project internal intangible aspects, the relationship concerning the boundaries factors between the mega event project and its ecosystem, and the ecosystem dimension representing the external intangible aspects. The strategic capital dimension and its assets come from the concepts of the resource based view (RBV) (GRANT, 1991) and the dynamic capabilities view (TEECE et al., 1997). The human, the structural and the relationship capital dimensions and their assets come from the concepts developed by the Skandia Navigator, proposed by EDVINSSON; MALONE (1999). The ecosystem capital dimension and their assets come from the concepts developed by ALLEE (2000) and CAVALCANTI; GOMES (2000) regarding the

importance of introduce an external component perspective on the intangible capital measurement.

After the selection of the capitals, assets and indicators (i.e. what variables should be collected - figure 14 and table 5), we formulated specific evaluation matrices and questions (figures 15, 16 and tables 6, 7) and defined how to collect data (a guideline) from the set of dimensions, assets and indicators. For each asset and/or competence was proposed at least one indicator to measure it. The indicators should represent observable aspects in terms of impacts and/or effects due to the mega event interventions. Aware about the complexity regarding our construct, involving a subjective (qualitative) judgment, and the measurement of the intangible assets based on perceptions, we recommend that the data collection be performed in a face-to-face interview basis.

The expectations and perceptions of the mega event project stakeholders about the impacts of the 2014 FIFA World Cup interventions on the intangible capital regarding the tourism industry at Rio de Janeiro region that can generate positive legacies are measured and evaluated by two specific ME-I^2 Model outcomes: a) the index of the relative value creation potential, for each intangible capital dimension and b) the performance rating for the 2014 FIFA World Cup intervention plan on the Rio de Janeiro city Tourism industry, in a overall manner and in respect to each capital dimension, asset and indicator.

The index of the relative value creation potential represents the ideal competitive positioning balance for the tourism intervention plan according the point of view of the stakeholder. The index allowed us to measure the expectations of each stakeholder individually, and of the sample as a whole, regarding to their investment priorities according to their vision of success. As we can see in the results presented (figure 17 and table 8), this ME-I^2 Model outcome seems to us a simple tool to identify and express the expectation of the sample in regards of its point of view according a degree of importance. In addition, the relative value creation potential also seems to fit our performance objective of determine a composite index that may be used for objective comparisons by using a subjective judgment as input, once it permits comparing the expectations between the stakeholders and groups evaluated (see table 8). According the narratives of the stakeholders evaluated, the procedure to collect the data was simple and direct, but we perceive some difficulties among some stakeholders to define the proportion between the intangible capital dimensions. We guess this problem can be minimized with a previous contact with the measurement matrix (figure 15), providing more time to the stakeholder reflects on this issue.

Regarding the measurement and evaluation perspective, the implications of the results of the index of the relative value creation potential can be focused on: a) the identification of the level of shared vision and preferences, b) the comparison between the point of view of different stakeholders or groups of stakeholders, and c) the evaluation of the degree of stability on preferences of the involved stakeholders. If there is a complete unanimity or uniformity according the project interests the management effort is easier. However, a certain multiplicity of opinions can enrich the police and innovative environments of the project. As mega projects usually have a huge number of stakeholders, there are different intrinsic interests (FRICK, 2008), rationales, cultures, visions and expected benefits (value-creation drivers) involved. In our case study, despite the fact that we didn't find statistically significant difference between the groups, the results show a different pattern of ideal competitive positioning between the internal and external stakeholders groups (table 8). Within each group, we can identify a greater uniformity according the project interests on the internal stakeholders and the certain multiplicity of opinions regarding the external stakeholder, probably due to the greater number of institutions enrolled, with different intrinsic interests. Thus, the results confirm a certain multiplicity of opinions, agreeing with the BRUIJN; LEIJTEN (2008) theory about complexity with regard to social iteration within the different stakeholders involved.

An interesting point to be developed is exploiting this model outcome as a tool to evaluate the degree of stability on preferences of the involved stakeholders (BRUIJN; LEIJTEN, 2008), because it can affects the manageability of the mega event project. During the life cycle of the project, preferences and aims can change due to changes in environmental factors, overall conditions, technical development, new technologies, etc., i.e. there are multiple sources for such dynamism. When the dynamics of these changes are extreme, preferences and aims are subject to constant changes, thus the manageability is affected. Therefore, if continuously monitored, the index of the relative value creation potential can also be used as a dynamic measure of the degree of stability on preferences. Thus, the needs and interests of the stakeholders can be revealed in different moments during the life cycle of the mega event project.

In addition, the results captured in each group (table 8) also leads us to infer that the expectations around the tourism intervention plan focused more on the mega project internal issues, concerning the mega event execution itself (human and structural dimensions for the internal stakeholders, and strategic and human dimensions for the external stakeholders), than on the potential external legacies for the tourist sector (ecosystem dimension). It is also noteworthy the fact that the emphasis on the human capital captured by the ME-I^2 model from the internal stakeholders perspective (35,0% value creation potential), was confirmed by a concentration on the budget distribution of

the tourism intervention financial plan. The amount allocated for the lines of action services qualification, tourist information and support reached over 74% of total planned resources (R$ 82,2 million from the R$ 110 million).

The performance rating represents a measure of the stakeholders' perceptions about the performance of the impacts of the Tourism intervention plan on the Rio de Janeiro city. It takes into account each stakeholder strategic priorities on the performance calculation and return a value in % that reflect the perceived potential of improvement (positive impact) or worsening (negative impact). For example, if a stakeholder has the perception that the impact on a particular indicator reached its maximum benefit (improvement) theoretical potential, the performance rating for the same indicator would be +100%. On the other hand, if a stakeholder has the perception that the impact on a particular indicator reached its maximum downside (worsening) theoretical potential, the performance rating would be -100%.

As we can see in the results presented (tables 9, 10 and 11), this ME-I^2 Model outcome seems to appropriately measure our construct of interest. The overall performance ratings results came in line with we previously expected, with basis on the narratives collected during the interviews. The performance ratings also seems to fit our performance objective in determining a composite index that may be used for objective comparisons by using a subjective (qualitative) judgment as input, once it permits comparing the perceptions between the groups evaluated, as well as within the same stakeholder or group during the life cycle of the project. During the interviews, apparently all stakeholders get a clear comprehension about the construct of interest and the domain to be evaluated, according their narratives and questions, and the results presented on the step four of our DSR process cycle.

Analyzing the response spreadsheets collected from the nine stakeholders interviewed we perceived evidence of response consistency, except by the identification of just one response that can be interpreted as an outlier, regarding the impacts on the human capital intangible dimension (for further details see the discussion on the current section about the step four of our DSR process cycle). In our point of view, three strategies were determinants for the response consistencies, a previous presentation about the domain to be evaluated, the formulation of confirmation questions for the assets evaluation, and conducting the interviews only with institutional stakeholders with major influence roles on the legacy development.

Before the application of the ME-I^2 Model, we performed a brief explanation about the strategic vision of the Brazilian Government for the 2014 FIFA World Cup, the objectives and lines of action of the Intervention Plan to the Tourism industry, the total projected budget to implement the intervention plan, the importance of establishing a

strategic vision and performing an adequate planning and management of the impacts and legacies for the host city, and a general presentation about the ME-I^2 Model and the intangibles potential contribution. We performed this previous presentation for leveling the knowledge about the domain to be evaluated and for try to keep the response consistencies among the stakeholders.

Following the DEUTSCHER (2008) propositions, the stakeholder`s answers should not be based on a merely speculation or vague opinions, but on something which can be supported with evidence. Therefore, for each indicator was formulated one confirmation question (table 7) to capture the stakeholder's knowledge about the impacts/effects of the mega event interventions on the respective asset or competence, and the foundations of his/her perception in a more objective and concrete manner. Thus, the interviewer must not just ask by the perception about the mega event project impacts, it becomes necessary to check and understand the foundations of the perceptions and if it corresponds to a logical reality. We assume this approach avoided misunderstandings and minimized the risk of misinterpretations, and consequently evaluation of different concepts by different stakeholders.

As the ME-I^2 Model should be able to deal with the aspirations of competitiveness and local development from the mega event project impacts, we decided looking for capture a macro perspective and avoid perceptions on an individualized subject level. Therefore, we decided that the interviews should be conducted with institutional stakeholders from representative groups identified in our stakeholder-mapping matrix with major influence roles on the legacy development (future value-creation). According our perspective, they are the government bodies with directly involvement with the mega event project, development agencies, business and professionals associations from directly (tourism) and indirectly (non-tourism) impacted industries, and consultants specialized in mega sports events. In our point of view, the information provided above raises evidences that the ME-I^2 Model theoretical foundation embraces our construct of interest and the model is comprehensible and faithful to simulate a construct's realistic engagement process.

Regarding the measurement and evaluation perspective, the implications of the results of the performance rating indexes can be focused on: a) the measure if a given impact appear or not, b) the evaluation of the degree of the perception about the impacts, i.e. the perceived potential of improvement (if positive impact) or worsening (if negative impact), c) the comparison between the perceptions of different stakeholders or groups of stakeholders, and d) the proposition of a performance category to classify the impacts according the position of the performance ratings on the quartiles distribution, such as it was done with the impact evaluation matrix (table 6).

According our definition of impact, meant as a change that is a result or consequence of an action and/or an intervention. And the definition of measurement, meant as the act of identify if a given impact (among which the possible ones that can be generated for and by the project) emerge or not. The results from the performance ratings can generate instantaneous response about if a given impact appears or not. As we can see in the impact evaluation matrix (table 6), if a stakeholder has the perception that such a given impact not appear in a specific indicator, he/she has only to grade it as a neutral (zero) impact. If an asset has all of its indicators scored as neutral, its performance rating will be equal to 0% of its potential for improvement.

Differently from the measurement, the evaluation process is the act of identifying the subjective judgment about the value of the modification that the impact entails. Thus, to demonstrate the value that the impact entails the stakeholders were asked to rank, in the impact evaluation matrix (in which the impact/effect was distributed into two quartiles), their degree of perception about the impacts. Starting from zero (neutral) impact to the positive side (improvement) **or** the negative side (worsening), until a maximum theoretical potential for each side, each stakeholder has a five-point graduating scale (0 to +2,0 points or 0 to -2,0 points) to evaluate its own perception (table 6). After the calculation steps explained in the step three of our DSR design cycle (section 6.2) it is possible to know the performance rating for each indicator. The intangible asset performance ratings are calculated by the mean of the performance ratings from its indicators (table 11). The intangible capital dimension performance ratings were calculated from the sum of its assets (table 10). The same approach was applied to calculate the overall performance rating (table 9), i.e. the sum of all intangible capital dimensions. The overall performance rating is the result of our focus on a perspective of capturing and expressing the performance of a particular mega event project in achieving its goals, according to a specific strategic vision.

In our case study, the overall performance rating including both groups was 11,5, reflecting that the tourism intervention plan achieved 11,5% of its potential for improvement. This result came in line with we previously expected, with basis on the narratives collected during the interviews. Such overall performance rating stands inside the first quartile of improvement, reflecting an overall perception of a slightly positive impact of the mega event project intervention on the intangibles. This result was strongly influenced by an adverse perception of the external stakeholders. They had a slightly positive perception tending to neutral impact, achieving only 2,5% of its potential, inside the first quartile of improvement. The internal stakeholders, on the other hand, perceived a moderately positive impact, with 38,5% of its potential, standing into the second quartile of improvement.

Therefore, the comparison between the perceptions of different stakeholders or groups of stakeholders can be done. During the analysis of the overall (table 9) and the intangible capital dimensions (table 10) performance ratings results it was possible to perceive the difference between the perceptions according the stakeholder involvement bias (internal or external) on the mega event project intervention plan. The comparison between the overall performance ratings of the two groups showed a statistically significant difference (table 9). Such results was strongly influenced by an adverse perception of the external stakeholders, fact we also previously expected. The intangible capital dimension performance ratings from the external stakeholders reflected a slightly improvement potential perception tending to neutral impact (between -2,2% for the human capital and 16,5% for ecosystem capital). On the other hand, as we have already expected, based on their participation in the Tourism interventions planning and/or execution, the internal stakeholders presented a moderately optimistic view regarding its impact, with performance ratings between 37,5% (relationship capital) and 46,5% (ecosystem capital).

During the analysis of the performance ratings regarding the intangible capital dimensions and assets (tables 10 and 11), it was also possible to raise some evidences that can explain the difference on the overall performance perception between the two groups, and agree with the findings gathered in the literature review chapter and in our documentation analysis concerning the main issues regarding the mega projects, such as: a) the apparently deficient communication about the actions and interventions provided by the internal group; b) the poor external stakeholders knowledge about the preparations efforts and initiatives; c) the focus more concentrated on the development of the internal project aspects (human, structural, and strategic intangible assets) than the external ones (relationship and ecosystem); and d) the improvements in the asset Host city brand.

The factors a) and b) were evidenced by the perception regarding the performance of the relationship capital dimension evaluated in the last position by the internal group (table 10), and of their asset ‘Relationship with suppliers and/or partners’, evaluated by the internal group in the lower quartile of improvement and by the external group in the first quartile of worsening, i.e. a negative impact (table 11). The factor c) was evidenced by the performance rating evaluation concerning the internal project intangible assets (human, structural, and strategic) by the external group (table 10). And the factor d) that was evidenced by its own performance rating, evaluated in a moderately positive position by both groups, and was confirmed by the surveys commissioned by the Brazilian government (MINISTÉRIO_DO_ESPORTE, 2014).

The last implication regarding the measurement and evaluation perspective is the proposition of a performance category to classify the impacts according the position of the performance ratings on the quartiles distribution. With basis on the impact evaluation matrix (table 6), we propose a categorization matrix to help to identify and classify the performance ratings. We applied such categorization during the demonstration step of our DSR design cycle to ease the understanding of the general audience.

Table 12 – Performance rating categorization matrix

Improved				No impact	Worsened			
Considerably positive	largely positive	Moderately positive	Slightly positive	Neutral	Slightly negative	Moderately negative	Largely negative	Considerably negative
+100,0-75,1%	+75,0-50,1%	+50,0-25,1%	+25,0-1,0%	0	-1,0-25,0%	-25,1-50,0%	-50,1-75,0%	-75,1-100,0%

Regarding the model appropriateness (or relevance), our concern was identify what kind of reliable and useful information the ME-I^2 Model outcomes can provide and evaluate their implications on a perspective of improve the strategic management and decision-making of mega event project directed to generate positive legacies, contributing for inducing value creation, competitiveness and local development. The balance between the potential benefits (positive impacts and legacies) and downsides (negative impacts and legacies) from hosting a mega event has been questioned due to the high investment demands. A significant number of studies (KASIMATI, 2003; MATHESON, 2002; OLIVEIRA, 2012; ZIMBALIST, 2010) failed in collecting scientific evidence to support the delivery of direct economic benefits in hosting two of the bigger and celebrated mega events, the Olympic Games and the FIFA World Cup. Even the post exploitation of the improved infrastructure delivered from the mega event project interventions, which can generate significant intangible benefits to the host city/country, is over debate (OLIVEIRA, 2012). On the other hand, some findings indicate that the non-financial and intangible impacts are potentially the major economic benefits of mega events, by its nature, variety and indirect influence on economic factors in host countries/cities (NOOIJ et al., 2013; PREUSS, 2007;2010).

The traditional metrics and indicators to evaluate the mega projects catalyst effect, such as the impacts on the GDP, guide the policy decisions of governments and a broad range of economic actors since the 1930's. The problem is that they are not suitable anymore taking into consideration the context of the knowledge economy. To improve the indicators for the knowledge economy we have to measure the knowledge and its inputs; stocks and flows; outputs; networks; and learning (OECD, 1996). It is also

noteworthy that a better and consistent measurement and disclosure of the intangibles, could have a positive impact on performance by improving internal controls and risk management, raising the quality of strategic decision and increasing overall transparency for the stakeholders (OECD, 2013b). Therefore, the issue of how to measure the accumulation and, especially, the usage and management of intangible assets and resources should become a major concern for managers and decision makers who want to succeed in the Knowledge Economy. However, the existence of reliable operational methods ready to use on the assessment and evaluation of mega events projects intangible impacts and legacies is still unclear. Such fact raises the need of solutions for performance improvement by the development and testing of innovative approaches to deal with the mega projects context.

In addition to the index of the relative value creation potential and the performance rating indexes, described above, the third ME-I^2 Model outcome, the dynamic value of the intangible capital (IC) can add valuable information regarding the strategic management and decision-making perspective. Once it combines the financial value of the intangibles assets with the performance of the 2014 FIFA World Cup tourism intervention plan, the dynamic value for IC represents a dynamic measure of the competitiveness. According BOUNFOUR (2003a), the analysis of the evolution of the dynamic value for IC could be a good point for the measurement of goodwill over time. Hence, its regular monitoring during the phases of the mega event project life cycle can help to raise evidence about the mega event project efficiency question, i.e. are the mega event project really producing its impacts in a cost-effective way? Unfortunately, in our case study as we proceeded only one evaluation round with the ME-I^2 Model we don't generate useful information to raise evidence about the 2014 FIFA World Cup tourism intervention plan efficiency.

However, regarding the strategic perspective and with basis on the evidences provided by the three ME-I^2 Model outcomes and the implications of its results, the 2014 FIFA World Cup tourism intervention plan managers and decision-makers could interpret what is working and what isn't. So, they could stop doing something that isn't working and reallocate the resources (human, material and financial) from this activity to a more effective undertaking with the same objective, or they can rethink a way to fit the value-creation potential of the mega event project, according the dynamic viewpoint of expectations and perceptions (value-creation drives) from the different involved stakeholders.

The literature shows evidences that the reporting of intangibles aspects could have a positive impact on performance by improving internal controls and risk management, raising the quality of strategic decision, increasing overall transparency for the

stakeholders (OECD, 2013b) and reducing the information asymmetry. Thus, the disclosure of the ME-I^2 Model results, for example, could help to reduce the conflict of interests, uncertainty and poor cooperation between partners, a general characteristic noticed in mega projects (VAN MARREWIJK et al., 2008). In addition, they could improve and extend the compliance requirements, mainly about governance, accountability and transparence.

One interesting example, regarding the relationship capital dimension and its assets are noteworthy. According our point of view, the poor cooperation between partners can contribute to a poor performance scheme in terms of public support, economic and environmental outcomes, leading to the Megaproject Paradox effect. The general audience fears negative consequences related to the mega event projects, such as waste of public funds, cost explosions, construction noise and environmental damages (KÖNECKE; SCHUBERT, 2014). However, the perception of positive impacts, in particular regarding the image improvement, was measured as the strongest predictor of support, while the perception of negative impacts showed a much weaker association with support (MÜLLER, 2012).

The ME-I^2 Model captured both the patterns of the poor cooperation between partners that could contribute to a poor performance in terms of external support and of the image improvement as the strongest predictor of support in regard to the institutional stakeholders. The contributions to the relationship capital dimension perception were mainly due to the improvements in the asset Host city brand, reputation and identity perceptions that was evaluated with performance ratings of 62,5% (internal group) and 21,8% (external group) of their potential. Thereupon, we can see the improvements in the asset Interaction networks that was evaluated with performance ratings of 48,5% (internal group) and 31,3% (external group) of its potential, and the improvements in the asset Customers and/or end users relationship that was evaluated with performance ratings of 45,0% (internal group) and 8,3% (external group) of its potential (table 11). Such assets had a moderately and largely positive perception (on the second and third quartiles of improvement) by the internal group, and a slightly and moderately positive perception (on the first and second quartiles of improvement) by the external group. The only asset in the relationship capital dimension with a different perspective between the groups' perception (non statistically significant) was the Suppliers and/or partners relationship. The performance rating for this asset reached 8,5% (internal group) and -7,2% (external group) of its potential. Although the internal group has a slightly positive perception (on the first quartile of improvement) and the external group has a slightly negative perception (on the first quartile of worsening), both tended to the neutral impact (table 11). Thus, the 2014 FIFA World Cup tourism intervention plan managers and

decision-makers should have to implement (or improve), for example, a formal process to improve transparency, exchange information, purpose alignment and the disclosure of objectives and actions, between the Government and suppliers and/or partners. Or put in place other measures to improve the suppliers and/or partners relationship.

As indicated in the chapters 1 and 2, mega event project decision-makers and managers face a vast list of challenges, such as: a) The need of a strategic vision for the mega event project related to the host city/region competitive advantages aligned with a modern urban development strategy, and a proper planning and management of impacts and legacies to maximize them; b) The insufficiency of scientific information on issues related to planning and strategic management of impacts and legacies in mega event projects, mainly in sports industry; c) The emergence of the intangible (intellectual) aspects as new sources of growth and the intangible assets (intellectual capital) management as an essential task for businesses that want to succeed in the new century reality; d) The uncertainties about value creation, budget allocation, return on investment and reevaluation of priorities; and e) The lack of reliable performance models and indicators to assess the intangible aspects of mega event projects.

To deal with these challenges BOUNFOUR (2003b) recommends that a dynamic strategic approach to value-creation with basis on the intangibles appear to be a valuable tool to repositioning the organizations, business, and nations performance. Thus, we can infer that it could also be true to improve the mega event projects legacies performance. A key guideline for a dynamic strategic approach could be to continuous collect variables to understand the new challenges and rationales (ways of thinking) that influence the internal and external environments, to build a definition of future vision, and to design and, most important, to implement a dynamic action plan.

Therefore, the acknowledge regarding the intangible factors that can trigger the transformation of the 2014 FIFA World Cup impacts in positive tourism legacies for the host city, and the evaluation of the extend which the tourism intervention plan achieved its strategic vision, according the expected changes in value creation envisioned by some stakeholders, is a critical point. Monitoring such information, using the ME-I^2 Model can be valuable for improving the decision-making process and strategic management, as well as for deal with transparency and governance issues concerning the project stakeholders. As aforementioned, the positive association between macroeconomic growth, competitive advantage, greater productivity, income and the intangible capital suggest a possible missing link between the mega event projects investment and its outcomes, impacts and legacies.

Regarding the need of a strategic vision for the mega event project and a proper planning and management of impacts and legacies taking into consideration the host

city/region competitive advantages aligned with a modern urban development strategy. In an effort to maximize opportunities and reduce risks in generating legacies from mega event project, the (IOC, 2009a) recommends nine tenets that should be followed for an adequate impact and legacy delivering and monitoring: a) The implementation of previous planning and long-term vision; b) The early implementation of the positive impacts and legacies, providing early benefits for the host city/country; c) The involvement and alignment with the host city long-term planning and management strategic vision, particularly infrastructure and urban planning issues; d) The need a expectations management for realistic goals legacy, the Games will not solve all the challenges that the host city/country faces; e) The long-term legacy should be kept under the supervision of existing organizations, such as public entities, to ensure that legacy will be able to fruition; f) There must be a clear definition of roles and responsibilities concerning the planning, design, implementation, management and operation of the legacy; g) The legacy objectives should be shared and communicated, on a regular basis, to host citizens, so it will be possible mobilize and support public engagement; h) The legacy decisions should be made taking into account the overall host city needs and priorities; and, i) A dynamic and flexible approach should be use to minimize the impact of external events and decisions

Although unplanned impacts can arise, both the formulation and selection of strategies, and the planning and management of the positive impacts and legacies must be performed to reduce the mega event projects inherent risks, and to ensure an effective investment reward to the host city/country. The lack of a strategic vision for the event and a proper planning and management of impacts could lead to lost opportunities and wasted resources (CLARK, 2008). Therefore, we can realize the requirement for a holistic, clear and well-defined strategy in respect to legacy, as well as already happens in respect to the mega event project organization itself.

In our case study, we expected a greater attention to such dimension because it embraces the set of external factors to the project, i.e. the impacts and legacies of the mega event project, which can be positively affected by the tourist intervention plan and the FIFA World Cup Project as a whole. This set of external factors is related to the financing system, the regulatory environment, the innovation (R&D) and entrepreneurship environment, the quality and adequacy of infrastructure and logistics, and the incentives for the sector development. All improvements on these factors can generate positive effects after the end of the mega event yielding the main potential legacies to the sector.

Thus, the exploitation of the results of the relative value creation potential index can be focused on, once identified the point of view of the different groups of stakeholders,

the level of shared vision and preferences, and the degree of stability on preferences of the involved stakeholders, using these information to manage the different interests visions and expected benefits (value-creation drivers), comparing the different groups involved. If continuously monitored, the use of the relative value creation potential index as a dynamic measure of the degree of stability on preferences can reveal the needs and interests of the stakeholders in different moments during the life cycle of the mega event project. In addition, we can use the performance ratings to evaluate the assets, resources, processes and competencies regarding a) the strategic capital dimension, to monitor the external environment, and to formulate, implement and follow up the impact/legacy strategy, and b) the ecosystem capital dimension, to monitor the set of intangible factors external to the mega project, concerning the business environment where it operates.

Concerning the insufficiency of scientific information on issues related to planning and strategic management of impacts and legacies in mega event projects, mainly in sports industry. The continually application of the ME-I^2 Model in different points during the life cycle of the mega event project, in addition to the traditional tangible measures, can generate a data warehouse that could be useful to raise scientific evidences about the planning and management of impacts and legacies with the use of the modern big data approaches and techniques (analytics and visualization).

In relation to the emergence of the intangible (intellectual) aspects as new sources of growth and the intangible assets (intellectual capital) management as an essential task for mega event projects that want to succeed in the new century reality. According BOUNFOUR (2003b) and BOUNFOUR; MIYAGAWA (2015), the intangibles challenge the way organizations act, function, think and deal with the value creation, including its main driving factors. Hence, if we understand how the various sources of value creation can be integrated with basis on the intangible assets we probably will be in the forefront to deal with the various social and economic transformations that are underway, and which call for a redesign in business models, organizational strategies and national policies.

A proper management of such intangible factors is decisive to support the mega event project managers and decision-makers' work (BOUNFOUR, 2003b; OECD, 2008) towards the implementation of a modern urban development strategy. According BRUNET (1995), OECD (2006b) and PREUSS (2015), this strategy can be understood as a combination of urban and infrastructure modernization with focus on a positive economic catalyst effect on greater capitalization, growth of the service sector, internationalization, attractiveness, centrality, productivity, competitiveness and quality of life. Also according the literature (UNWTO, 2015), the mega event projects have a

direct impact on tourism industry. And the tourism industry, as discussed in the chapter 4, has become increasingly important due to its influence on the socioeconomic development of nations, affecting a range of factors that can trigger the catalyst effect aforementioned, including investment, employment generation, infrastructure development, accommodation, transport facilities and destination branding.

The mega event literature (CLARK, 2008; PREUSS, 2007) raises as an essential task a proper planning of the potential positive impacts for a better exploitation of the mega event project legacies and great support to the host city/region sustainable economic development. In ME-I^2 Model we tried to deal with the value creation dynamics and its main driving factors, in an effort to monitor the intervening factors concerning these mega event project positive impacts by the mean of measuring the expectations (relative importance index) and perceptions (performance rating) about the impacts performance on the intangible assets.

Concerning the uncertainties about value creation, budget allocation, return on investment and reevaluation of priorities. Usually, the huge number of stakeholders with different intrinsic interests, rationales, cultures, visions and expected benefits (value-creation drivers); the degree of technical complexity; the different degrees of stakeholders influence and dependence on their preferences; the inadequate deliberation or inaccuracy about risk, demands and costs; the actions of marketing and promotion to mitigate possible adverse impacts; and the power game, among other factors, keep the focus of the mega event projects and decision-makers in a 100% basis. Thus, as they 'don't have time' to deal with the mega event project interventions plan relating to generate positive legacies, there are generally two pitfalls regarding this scenario. The plan became unmanageable in terms of schedule and costs, or is impoverished as to its substance with too little ambition and not sufficiently future-orientation (BRUIJN; LEIJTEN, 2008).

According the results captured by the ME-I^2 Model, in our case study, we can infer that the 2014 FIFA World Cup tourism intervention plan managers' felt into this trap. The expectations around the tourism intervention plan (table 8) focused more on the mega project internal issues, concerning the mega event execution itself (human and structural dimensions for the internal stakeholders, and strategic and human dimensions for the external stakeholders), than on the potential external legacies for the tourist sector (ecosystem dimension). With basis on this expectation, mainly from the internal stakeholder point of view, we guess that it will be difficult to the tourism intervention plan support its third objective, the transformation of the 2014 FIFA World Cup achievements in positive legacy for the country after the mega event (MINISTÉRIO_DO_ESPORTE, 2012a). The focus more concentrated on the development of the internal project

intangible assets than the external ones, can lead to a poor overall performance perception of the mega event project in generating positive impacts and legacies. Fact that was really confirmed! The overall performance rating including both groups was 11,5, reflecting that the tourism intervention plan achieved 11,5% of its potential for improvement (table 9). This result was strongly influenced by an adverse perception of the external stakeholders. They had a slightly positive perception tending to neutral impact, achieving only 2,5% of its potential, inside the first quartile of improvement. The internal stakeholders, on the other hand, perceived a moderately positive impact, with 38,5% of its potential, standing into the second quartile of improvement.

To try breaking this specific trend, we should implement a dynamic and flexible approach to minimize the impact of external events and decisions, taking into account the overall host city needs and priorities, sharing and communicating the legacy objectives on a regular basis and with a clear definition about roles and responsibilities concerning the planning, design, implementation, management and operation of the legacy (IOC, 2009a).

Finally, the challenge involving the lack of valid performance models and indicators to assess the intangible aspects of mega event projects seems to be, at a first glance, on the path to resolution. According some evidences and findings presented in the literature review chapter, it seems that when hosted well, the mega event project can play a significant role in city/region local development, growth and competitiveness. Such role can be achieved when the mega event act as catalyst and/or trigger for specific success factors, that lead to a tourism and business destination attractiveness, business growth, urban regeneration, and improvements in infrastructure, image, environment and local population welfare/quality of life — job creation, goodwill, skills, etc. (OECD, 2010). However, the amount of investment and the attempt to use the mega event project as trigger for local economic development raises the pressure from the public opinion regarding the efficacy of funds allocation, transparency, accountability and evidences of a proper return on investment.

In our point of view, a possible source for the FLYVBJERG et al. (2003) Megaproject Paradox and the large numbers of disappointing results, could be a detachment between the significance of the outcomes of the mega projects (real delivered impacts) and the value created (benefits expected) for the large number of stakeholders and general audience, vis-à-vis the huge financial tax payers investment. Such vision is, in part, shared by ARMENAKYAN et al. (2016). In a study to explore the impact of expectations and their confirmation on attitudes and evaluations of the Olympics Games, they found that the attitudes towards the games as a destination and as an event differ among people with different levels of individual association. However, the traditional approaches

to mega event projects performance measurement and evaluation seem to be insufficient to support the strategic maximization of the potential benefits and overall project performance.

However, the ME-I^2 Model seems to us a good option to fill this gap. According the results presented and the discussion provided in the current study, we raised preliminary evidences that the ME-I^2 Model can be an useful tool to deal with the measurement of the impacts regarding the intangible factors that can trigger the transformation of the 2014 FIFA World Cup achievements in positive tourism legacy for the Rio de Janeiro city, and also can help to evaluate in which extend the Brazilian Government intervention plan achieved its strategic vision, according the expected changes in value creation potential envisioned by the stakeholders interviewed.

The ME-I^2 Model outcomes can be part of an useful dashboard in addition to the traditional tangible measure for monitoring the mega event project impacts, once it raise evidences to help answering the four questions proposed by BEHN (2003) as selection criteria for the evaluative purpose of a performance measure. The performance rating indexes (overall and regarding to the intangible capital dimensions and assets) can help to answer the effectiveness question, i.e. if the mega event project achieves, and to which extend, the results it set out to produce, and also can raise evidences about the impact question, what did the project itself accomplish. The regular monitoring of the dynamic value of the IC during the phases of the project life cycle can help to raise evidence about the efficiency question, i.e. if the mega event project produces its results in a cost-effective way, and what could be the best financial valuation of the IC. A narrative approach in regard to the confirmation questions (table 7) could help answer the best practice question, i.e. how the operations and practices of the project are compared with the ones that are known to be most effective and efficient. Nowadays, some evidences in such regard can be raised with basis on the level of the indicators performance ratings. Specially those concerning the project internal intangible factors (strategic, structural and human capital dimensions).

Thus, we conclude that the ME-I^2 Model achieved the final result pursued, i.e. to assess how the mega event project performance is really expected, perceived, and evaluated by different stakeholders, based on the intangibles, and to raise evidences about how can we increase the likelihood of successful projects, contributing for inducing value creation, competitiveness and local development.

7. CONCLUSIONS

According some findings (CLARK, 2008; OECD, 2010; PREUSS, 2007;2015), the mega event projects can play a significant role acting as catalyst for changes and improvements in the host cities/regions leading to growth, local development and competitiveness. The mega event itself is generally of short duration, varying between a couple of days to a few weeks, but the changes it brings can have important and lastly consequences. As these consequences can turn themselves into benefits or downsides, we raised for the present study the central research question of identify how one can measure and evaluate the impacts generated for and by mega event projects with a focus on future value creation (positive legacies), taking into account the intangible assets. We reached such question mainly due to two key factors, among others presented and discussed in the literature review section. The former is the need of new methods of impact analysis and management to support the mega event projects as instrument of growth and competitiveness. And the latter is the fact that at the current knowledge economy the new sources of growth tend to turn from the tangible to the intangible (intellectual) aspects.

The intangible capitals have become strategic factors for value creation, and are considered nowadays the main sources of sustainable competitive advantage for governments and organizations (BOUNFOUR, 2003b; BOUNFOUR; MIYAGAWA, 2015; OECD, 2008;2013a) and, consequently, for their projects and policies. Some findings indicate that the intangible impacts are potentially the major economic benefits of mega events, by its nature, variety and indirect influence on economic factors in host countries/cities (NOOIJ et al., 2013; PREUSS, 2007;2010). Consequently, the proper evaluation and management of the intangibles as new factors of production is critical to support managers and decision-makers, and an essential task for organizations wishing to succeed in the new reality of the twenty-first century.

“The traditional economic indicators have never been completely satisfactory, mostly because they fail to recognize economic performance beyond the aggregate value of goods and services” (OECD, 1996). Such traditional metrics and indicators, such as the GDP, guide the policy decisions of governments and a broad range of economic actors since the 1930’s. The problem is that they, alone, are not suitable anymore taking into consideration the context of the knowledge economy. Since it works in a different manner from traditional economic theory, current indicators may fail to capture fundamental aspects of performance and could (may?) lead to misinformed economic policies and business decision-making. According the OECD (1996) recommendations, "To fully understand the workings of the knowledge-based economy, new economic concepts and

measures are required…". To do that and improve the indicators for the knowledge economy we have to measure the knowledge and its inputs; stocks and flows; outputs; networks; and learning. Hence, in our point of view, the more important is to understand the value-creation interactions between the tangibles and intangibles to explore the hidden opportunities.

In addition, we also identified the importance of establishing a strategic vision and performing an adequate planning and management of the success factors, which could support the mega event projects to play its significant role as catalyst for the host city/region local development, economic growth and competitiveness. Following this context, it seems to us that a good strategy formulation, implementation and follow-up, taking into account the intangible capitals, are key elements to ensure the mega event projects return-of-investment, the mitigation of some inherent risks and a potential instrument to withdraw the FLYVBJERG et al. (2003) Megaproject Paradox.

In our point of view, a possible source for the Megaproject Paradox and the large numbers of disappointing results regarding the mega event project performance, could be a detachment between the significance of the outcomes of the mega projects (real delivered impacts) and the value creation (benefits) expected for the large number of stakeholders and general audience, vis-à-vis the huge financial tax payers' investment. Such vision is, in part, shared by ARMENAKYAN et al. (2016), whom run a study to explore the impact of expectations and their confirmation on attitudes and evaluations of the Olympics Games. They showed that the attitudes towards the mega event project as a destination and as an event itself differ among people with different levels of individual association.

According our literature review, some researchers have developed advanced methods for measuring intangible assets. Regarding specifically the mega event projects, PREUSS (2007); (2015) took the firsts steps proposing a conceptual model for the identification of the mega events projects impacts and legacies taking into consideration the intangibles. The Preuss approach was the first attempt to organize the evidences regarding the importance of deal with the intangible aspects on this context. His approach is based on the long-term development plan for the host city/region and takes into account both the tangible (hard) and intangible (soft) structural changes delivered by a mega event project (figure 3). A different vision from the traditional mega events performance evaluation. However, the Preuss approach is only conceptual and the existence of valid operational methods ready to use on the assessment and evaluation of mega events projects intangible impacts and legacies, taking into account the intangible assets is still unclear.

One of his main contribution is the recommendation that the impacts and legacies evaluation should be performed based on its value "… for a defined period of time under a given welfare function", as well as based on a quantitative and qualitative analysis considering the tangible and intangible costs and benefits. But, while PREUSS (2007); (2015) took the way of identifying the intangible outcomes from the mega event, we tried a different path, to identify the intangible success factors, which could support the mega event projects to play its role as catalyst for the host city/region local development, economic growth and competitiveness. Thus, the performance objective for our solution was to develop a new system application to deal with the mega event projects impact performance based on the intangibles, taking a holistic view and using a subjective (qualitative) judgment to determine composite indexes that may be used for objective comparisons.

Therefore, we developed the new system, named ME-I^2 Model (Mega Event Intangibles Impacts Model), to measure and evaluate the mega event projects impact performance based on the intangibles. Such system should be able to a) measure and evaluate the impacts of the mega event project intervention's in the host city/region based on the intangibles; b) provide information for effective strategic management and decision-making; and c) deal with the aspirations of value creation (positive legacies), competitiveness and local development arising from the mega event project. The ME-I^2 Model was developed using the design science research (DSR) paradigm. The DSR is based on the act of creating an applicable solution, typically an artifact, to solve a problem. This research orientation is concerned in solving relevant complex problem that taking into consideration the context in which their results will be applied.

Thus, the development of the artifact is a search process that draws from existing theories and knowledge to come up with a solution. In a broadly view, the DSR process consists of a single cycle of construction and evaluation (figure 10). The construction is the process of production of a given artifact for a specific purpose, whereas the evaluation is the performance evaluation of the same artifact as a desired solution (LACERDA et al., 2013). To prevent the lack of a real-life event context and a well-defined objective to the impact analysis (BEHN, 2003; PREUSS, 2015), we developed the model (construction) and assessed its validity (evaluation) on the measurement and evaluation of the impacts on the intangible aspects generated by and for the 2014 FIFA World Cup interventions in the Tourism industry at Rio de Janeiro.

During the design phase of the ME-I^2 Model, to operationalize the measurement of the construct and guarantee the content relevance, representativeness and technical quality, we built a conceptual framework and an experimental (operational) model on a mixed approach from merging two traditional approaches to the intangibles, the IC

(intellectual capital) and the Dynamic (BOUNFOUR, 2003b). We took such strategy with basis in the work of BONTIS (2001) that raised the importance to the development of the intangibles field of building emerging measures on previous researchers' work. Hence, a common set of definitions and perspectives could be used.

The selection of the intangible capital dimensions, assets and indicators to build our mixed approach was performed according the recommendations of MILLER, V. A. et al. (2009). Thus, to meet our requirements and context, we begun from the original models, made some adaptations on the existing instruments, discarded some items when they bore no relevance to the construct measurement, and included some items we generated to assess the content that was not addressed. Hence, the ME-I^2 Model conceptual framework is composed by five intangible capital dimensions. The strategic, human, and structural dimensions are concerning the mega event project internal intangible aspects, the relationship dimension concerning the boundaries factors between the mega event project, its stakeholders and ecosystem, and the ecosystem dimension representing the mega event project external intangible aspects (see figure 14). In its operational version, each dimension incorporates a given group of assets, competencies and resources, 15 as a whole. Such assets, competencies and resources play the role of success factors for local development and competitiveness. And, for each one was proposed at least one indicator to measure it, 42 as a whole, representing observable aspects in terms of impacts and/or effects due to the mega event project interventions (see table 5).

The liaison between the intangible capital assets, competencies and resources chosen to take part of the ME-I^2 Model operational version and their role as main sources of competitive advantage for the achievement of the mega event project as a catalyst for the host city/region local development and competitiveness is evidenced in the literature, among others factors, by: a) the existence of a positive and strong association between competitive advantage and intangible investments, levered by R&D, design, branding, quality of products, intelligence, knowledge, ICTs, use of data analytics and management practices, initial education and vocational training (BOUNFOUR, 2003b; OECD, 2013b); b) a positive relationship between business investment in intangible assets and macroeconomic growth, greater business and labor productivity, and income per capita (OECD, 2013b); c) Customers and business are continuously demanding increased complexity and perceive an added value in products and services that incorporates a higher percentage of innovation, technology and intelligence (CAVALCANTI; GOMES, 2000); d) the fragmentation and geographic dispersion of value chains, as well as the increased sophistication of production processes (OECD, 2013b); e) the strong emergence of the new information and communication technologies (ICTs) (BOUNFOUR; MIYAGAWA, 2015); f) the identified spillover effects from the intangible

assets, i.e. the absorption of knowledge by people other than the originators, that occurs because knowledge is inexhaustible and cumulative good that is difficult to control, such as in design, brand equity, organizational capital and training to other parts of the economy (BASKERVILLE; DULIPOVICI, 2006; OECD, 2013b); g) the increased returns to scale in production due to the reduced, or even zero, marginal cost of some intangibles, which can also be reinforced by positive network externalities (BOUNFOUR, 2003b); and h) the added value and productivity of service activities that are primarily driven by the availability of educated and skilled human capital (OECD, 2006b).

The indicators of the observable aspects are measured with basis on a perception impact evaluation matrix, in which the impact/effect was distributed into quartiles starting from zero (neutral) to the positive side (improvement) or negative side (worsening), until a maximum theoretical impact potential for each side. The stakeholders should assign the correspondent score/note according his/her perception on a Likert 5-type scale (table 6). Alongside the perception assessment, each stakeholder should indicate the degree of relative importance of each intangible capital dimension, asset and indicator in order to identify the ideal competitive positioning according his/her point of view. It allowed us accomplish the impact evaluation based on its value for each stakeholder. The ideal competitive positioning measurement is performed in a weight assignment matrix, wherein the stakeholders should distribute a percentile scale weight within the capital dimensions, assets and indicators (see figure 15).

The ME-I^2 Model returns 3 main outcomes. 1) The index of the relative value-creation potential (degree of importance) for each intangible capital dimension. It is estimated directly by the weight assignment (see figure 15 and table 8). 2) Performance Ratings for the mega event project intervention, in different levels. One can calculate an overall performance rating, as well as performance ratings in respect to each intangible capital dimension or asset. The performance ratings are calculated by the relative percentage difference between a weighted score (the product of the impact score, from the impact evaluation matrix – table 6, and the relative weight, from the weight assignment matrix – figure 15) and the maximum possible score (+2, see table 6), which reflect the maximum theoretical potential for improvement, i.e. the ideal mega event project pay-off. And, 3) The dynamic value of the intangible capital. It is calculated by the product between the overall performance rating and the financial value of the intangible assets, estimated using the interventions expenditures as a proxy of the financial value of the assets.

The index of the relative value creation potential (1) provides the welfare function and reflects the expectations of the sample, and of each stakeholder group individually, regarding the investment priorities according to their vision of success or, as aforementioned, the ideal competitive positioning balance between the intangible capital

dimensions. The performance rating (2) reflects the performance perceptions about the benefits (potential for improvement) or downsides (potential for worsening) from the mega event project interventions on the intangible aspects, considered main sources of sustainable competitive advantage. Finally, the dynamic value of the intangible capital (3) combines the financial value of the intangibles assets with the performance of the mega event project on the intangible aspects, i.e. a coefficient of efficiency of the IC value, reflecting a dynamic measure of the competitiveness.

BEHN (2003) stated that the performance measurement is not an end in itself. It should be part of an overall management strategy to improve the performance of a given project and/or program, and their interventions, in a continuous feedback loop. The performance measurement systems can be used to report the mega event project value-creation dynamics, to identify accomplishments and weakness and to provide decision-making information to deliver sustainable positive impacts and legacies. Then, we took the decision that the ME-I^2 Model would try capture the stakeholder's perception about the impacts and/or effects arising from the mega event project intervention in a macro perspective. To do so and avoid get perceptions on an individualized subject level, we decided that the interviews should be conducted with representative stakeholder groups with key roles on the legacy development (future value-creation).

Therefore, in our validation case study, we collect data from nine institutional stakeholders, three from the government bodies and the mega event organizing committee, with directly involvement with the mega event project, and six from development agencies, business and professionals' associations from indirectly impacted sectors, and practitioners and researchers specialized in mega sports events. Following the MESSICK (1995) unified concept of validity, we theoretically evaluated the meaning and implications of the measurement, providing a discussion to raise initial evidences concerning the power of the model developed, i.e. we focused on evaluating the interpretations of the test scores, not the test itself (AERA, 1999). Thus, the model adequacy (or objectivity) was assessed taking into consideration the employment of the performance model to measure and evaluate the expectations and perceptions of the mega event project stakeholders about the impacts on the intangible capital. And the model appropriateness (or relevance) was assessed taking into consideration the power of the model in providing information for effective strategic management and decision-making directed to generate value creation (positive legacies), competitiveness and local development.

Regarding the adequacy (or objectivity) perspective, we provided a discussion about the implications of the results of the index of the relative value creation potential (1) that could be focused on: a) the identification of the level of shared vision and preferences,

b) the comparison between the point of view of different stakeholders or groups of stakeholders, and c) the evaluation of the degree of stability on preferences of the involved stakeholders. For example, in our case study, despite the fact that we didn't find statistically significant difference between the stakeholders' groups expectation, the results showed a different pattern of ideal competitive positioning between the internal and external stakeholders (table 8). Within each group, we can identify a greater uniformity according the project interests on the internal stakeholders and a certain multiplicity of opinions regarding the external stakeholder, probably due to the greater number of organizations enrolled, with different intrinsic interests. Thus, the results confirmed a certain multiplicity of opinions, agreeing with the BRUIJN; LEIJTEN (2008) theory about complexity with regard to social iteration within the different stakeholders involved.

We also provided a discussion about the implications of the results of the performance rating indexes (2) that can be focused on: a) the measure if a given impact appear or not, b) the evaluation of the degree of the perception about the impacts, i.e. the perceived potential of improvement (if positive impact) or worsening (if negative impact), c) the comparison between the perceptions of different stakeholders or groups of stakeholders, and d) the proposition of a performance category to classify the impacts according the position of the performance ratings on the quartiles distribution (table 12). For example, in our case study, the overall performance rating including both groups were 11,5, reflecting that the tourism intervention plan achieved 11,5% of its potential for improvement. This result came in line with we previously expected, with basis on the narratives collected during the interviews. Such overall performance rating stands inside the first quartile of improvement, reflecting an overall perception of a slightly positive impact of the mega event project intervention on the intangibles. This result was strongly influenced by an adverse perception of the external stakeholders. They had a slightly positive perception tending to neutral impact, achieving only 2,5% of its potential, inside the first quartile of improvement. The internal stakeholders, on the other hand, perceived a moderately positive impact, with 38,5% of its potential, standing into the second quartile of improvement.

Regarding the appropriateness (or relevance) perspective, we provided a discussion about the two ME-I^2 Model aforementioned outcomes and the dynamic value of the IC (3) that could add valuable information concerning the strategic management and decision-making perspective. With basis on the evidences provided by the three ME-I^2 Model outcomes and the implications of its results, the mega event project managers and decision-makers could interpret what is working and what isn't. So, they could stop doing something that isn't working and reallocate the resources (human, material and

financial) from this activity to a more effective undertaking with the same objective, or they can rethink a way to fit the value-creation potential of the mega event project, according the dynamic viewpoint of expectations and perceptions (value-creation drives) from the different involved stakeholders.

One interesting example, regarding the relationship capital dimension and its assets are noteworthy. According our point of view, the poor cooperation between partners can contribute to a poor performance scheme in terms of public support, economic and environmental outcomes, leading to the Megaproject Paradox effect. The general audience fears negative consequences related to the mega event projects, such as waste of public funds, cost explosions, construction noise and environmental damages (KÖNECKE; SCHUBERT, 2014). However, the perception of positive impacts, in particular regarding the image improvement, was measured as the strongest predictor of support, while the perception of negative impacts showed a much weaker association with support (MÜLLER, 2012). In our case study, the ME-I^2 Model captured both the patterns of the poor cooperation between partners that could contribute to a poor performance in terms of external support and of the image improvement as the strongest predictor of support in regard to the institutional stakeholders (see tables 8, 10 and 11).

Therefore, according the preliminary data collected in the current study, the ME-I^2 Model could help mega event project decision-makers and managers face some of his/her challenges, such as: a) The need of a strategic vision for the mega event project related to the host city/region competitive advantages, aligned with a modern urban development approach, and a proper planning and management of impacts and legacies to maximize them; b) The insufficiency of scientific information on issues related to planning and strategic management of impacts and legacies in mega event projects, mainly in sports industry; c) The emergence of the intangible (intellectual) aspects as new sources of growth and the intangible assets (intellectual capital) management as an essential task for businesses that want to succeed in the new century reality; and d) The uncertainties about value creation, budget allocation, return on investment and reevaluation of priorities.

To deal with these challenges, BOUNFOUR (2003b) recommends that a dynamic strategic approach to value-creation with basis on the intangibles appear to be a valuable tool to repositioning the organizations, business, and nations performance. Thus, we can infer that it could also be true to improve the mega event projects legacies performance. A key guideline for a dynamic strategic approach could be to continuous collect information to understand the new challenges and rationales (ways of thinking) that influence the internal and external environments, to build a definition of future vision, and to design and, most important, to implement a dynamic action plan. Monitoring such

information, using the ME-I^2 Model can be valuable for improving the decision-making process and strategic management, as well as for deal with transparency and governance issues concerning the project stakeholders. As aforementioned, the positive association between macroeconomic growth, competitive advantage, greater productivity, income and the intangible capital suggest a possible missing link between the mega event projects investment and its outcomes, impacts and legacies.

Such dynamic strategic approach to value-creation with basis on the intangibles proposed by BOUNFOUR (2003b) asks for an innovative aspect addressed by the ME-I^2 Model, the combination of the *ex ante* and *ex post* perspectives to the performance evaluation. In our point of view, the evaluation of the mega event impacts and legacies (tangible and intangible) should be performed during the entire project life cycle. The continuous stakeholders' perception collection, both to forecast the impacts and to identify and quantify the consequences of hosting the mega event, could help to monitor both the internal and external environments, providing useful information to build the dynamic strategic approach to a positive legacy delivery.

For example, the exploitation of the ME-I^2 Model outcomes could deal with the complexity with regard to social iteration within the different stakeholders (players) involved. The results of the relative value creation potential index (1) can be focused on, once identified the point of view of the different groups of stakeholders, the level of shared vision and preferences, and the degree of stability on preferences of the involved stakeholders, using this information to manage the different interests' visions and expected benefits (value-creation drivers), comparing the different groups involved. If continuously monitored, the use of the relative value creation potential index (1) as a dynamic measure of the degree of stability on preferences can reveal the needs and interests of the stakeholders in different moments during the life cycle of the mega event project. In addition, we can use the performance ratings (2) to evaluate the assets, resources, processes and competencies regarding a) the strategic capital dimension, to monitor the external environment, and to formulate, implement and follow up the impact/legacy strategy, and b) the ecosystem capital dimension, to monitor the set of intangible factors external to the mega project, concerning the business environment where it operates.

Hence, the ME-I^2 Model showed its adequacy and appropriateness and seem to us to be an interesting tool to measure and evaluate the impacts generated for and by mega event projects, taking into account the intangible assets, with a focus on future value creation (positive legacies). It monitors the perceptions and expectations of the mega event project stakeholders and can be a valuable font of information in regard of some intangible success factors that could have a positive impact on performance by improving

internal controls and risk management, raising the quality of strategic decision, increasing overall transparency for the stakeholders and reducing the information asymmetry. Such factors can contribute to improve the host city/region destination attractiveness, business growth, urban regeneration, and improvements in infrastructure, image, environment and local population welfare/quality of life (job creation, goodwill, skills, etc.).

Thus, we recommend that three ME-I^2 Model outcomes could be part of an useful dashboard, in addition to the traditional tangible measure, for monitoring the mega event project impacts, once it helps raise evidences to answering the four selection criteria for the evaluative purpose of a performance measure: a) what did the project itself accomplish; b) if the mega event project achieves, and to which extend, the results it set out to produce; c) if the mega event project produce its results in a cost-effective way; and d) how are the operations and practices of the project compared with the ones that are known to be most effective and efficient, in its specific context.

However, it is important to note that the conversion link between the performance evaluation results based on the ME-I^2 Model outcomes and an action plan to improve the mega event project interventions isn't trivial or happens automatically. As indicated by BEHN (2003) someone has to intervene consciously and actively to translate the findings in actions. The challenge here is to deploy the performance evaluation results in lessons learned and use this knowledge to update the implementation plan to change, if necessary or at the required degree, behaviors, policies, procedures, use of resources, etc., to foster a better future value creation, competitiveness and local development.

7.1. Limitations and possible directions for future research

Despite all our efforts concerning the scientific rigor and the care taken in the data collection, treatment and in the model development, the findings of the present study are susceptible to bias and interpretation limitations. As a measure of transparency and incentive for the development of future studies, we present here the identified limitations and some recommendations based on the experience conducting and presenting the current study.

Concerning the methods, some studies found benefits but also limitation in the use of formal design approaches, such as the design science research (DSR). One of the known limitations is the use of the method by less-experienced users, once there are little knowledge about differences in the method applications between experienced and novice designers (SEIDEL; FIXSON, 2013). Notwithstanding the previous experience of the author in developing artifacts applying the Design Thinking approach, we don't have

means to clarify this issue. Other identified limitation was the fact that, during the validation phase, we only attempt to verify the validity of the ME-I^2 Model to provide information for effective strategic management and decision-making in mega event projects, and its implications for action. We didn't test, neither provided information concerning the other basic measurement subjects, such as reliability, comparability, and fairness. Thus, we strongly advice the development of future studies to deal with these issues.

Concerning the data collection procedures, some limitations could emerge from stakeholders' difficulties in express themselves in regard of their expectations and perceptions. According the narratives of the stakeholders evaluated, the procedure to collect the data was simple and direct, but we perceive some difficulties among some stakeholders to define the proportion between the intangible capital dimensions, regarding the index of the relative value creation potential. We guess this problem can be minimized with a previous contact with the measurement matrix (figure 15), providing more time to the stakeholder reflects on this issue.

In future utilizations of the ME-I^2 Model, we also recommend that the researcher should try to apply a top-down planning and a bottom-up data collection approaches. First, the researcher may identify which economic industries or themes will be included in the study. Then, he/she may identify in the production chain of the same industry, which sectors and/or sub-sectors should be included. Thus, it will be possible to monitor the vision, expectation and perceptions of each sector and/or sub-sector that composes the industry production chain and interpret the results to identify the impacts performance on each sector and/or sub-sector. Once consolidated the results of all the mapped sector and/or sub-sector, we get the impacts performance of the mega event project. Notwithstanding to be time and resource consuming, this approach will provide a more comprehensive pattern of the real entire impact performance of the mega event project.

Concerning the model results and its implications, we are aware that the 2014 FIFA World Cup interventions could not produce all the perceived effects alone. Despite our effort to try eliminate indirect influences on the stakeholders' perceptions during the interviews, some intervening factors, such as the interventions in course for the Rio 2016 Olympics and the beginning of the 2014-2015 governmental fiscal crisis that has been affected the Brazilian economy condition, could probably affected the stakeholders' perceptions. Other limitation related to the difficulty in measuring the 'net' impacts and legacies rather than 'gross' ones is the lack of estimates about what would had occurred in the absence of the 2014 FIFA World Cup, and the Rio de Janeiro city had invested the available resources in other projects, which also could produce other positive impacts. Same as in previous researches in this field, we had no success to find ways to

distinguish which impacts and legacies would result solely from the mega event itself or from these other factors and/or alternative projects.

Concerning the model itself, during the development phase other intangible aspects were identified and may be included in our research agenda, such as the political dimension, the power game, the absorptive capacity of the project and indicators related to the mega event's legitimacy. However, for a variety of reasons we do not address them in this first version of the ME-I^2 Model. We intend to follow the IC literature, looking for potential contributions regarding evidences of cause-effect relationships between IC and organizations and nations performance, for future calibrations of the ME-I^2 Model. Other potential limitation identified was the reduced discussion about quantitative versus qualitative metrics. We tried to deal with this issue, in our literature review and results chapters, when we analyzed the works of BONTIS (2001) and SVEIBY (2010) among others, regarding the advantages and disadvantages of the different perspectives to deal with the complexities on the measurement of the intangibles, and the lessons learned by EDVINSSON; MALONE (1999) and MALHOTRA (2003). But, we are conscious that further discussion about this issue is needed.

We are also aware about the fact that, currently, the intangible measurement and evaluation, and consequently the ME-I^2 model, is quite complex and depends on the clear comprehension of its main features. However, there is no way to avoid the issue of the evaluation process and the intangible dimension. Measure and evaluate the intangibles are tasks somewhat difficult, but we are living a paradigmatic change from the industrial economy based in the three primary factors of production, natural resources (land), labor, and (produced) capital to the knowledge economy, based in the knowledge assets and intellectual capital (MALHOTRA, 2003). It is noteworthy that "An unknown proportion of knowledge is implicit, uncodified and stored only in the minds of individuals. Terrain such as knowledge stocks and flows, knowledge distribution and the relation between knowledge creation and economic performance is still virtually unmapped" (OECD, 1996), thus the development of operational (experimental) models to measure and evaluate intangibles is always an exercise of reductionism and limitation of the expression of these tacit knowledge.

Despite the importance of the Tourism industry to the host cities/regions local development and economic growth, as presented on the chapter 4, during the evolution of the current study we raised other potential areas where the mega event project can produce main lasting positive legacies. As mentioned in the section 6.1, both the 1992 Barcelona and 2012 London Olympic projects helped to raise some evidences that the focus of the mega event project legacies has to rely on a perspective of a modern urban development strategy. The globalization and the acceleration of the international trade

flows have put the metropolitan regions in a central role for the global economy and the cities are nowadays a key component in a territorial development strategy (OECD, 2006b). Thus, a comprehensive national economic strategy cannot ignore the characteristics of cities that affect economic performance, social cohesion and environmental conditions. As a city greater performance is strongly linked to certain kinds of economic activity, in particular high-tech and advanced services, a robust concentration of productivity and a high skill level people have been established, supported by a network of universities and advanced research centers around such industrial activities.

Finally, as aforementioned, someone has to intervene consciously and actively to translate the ME-I^2 Model outcomes results in lessons learned. The use of this knowledge to continuously update the urban development strategy plan is vital to foster a better future value creation, competitiveness and local development from the mega event project interventions. The main challenge regarding this issue is the fact that, from the knowledge-based management perspective, the ability to create economic value from intangible assets depends highly on the implementation of appropriate business strategies, and also the management capabilities of the organizations and people involved (OECD, 2006a).

To deal with the abovementioned limitations and opportunities of continuous improvement regarding the ME-I^2 Model future calibration, we suggest as possible directions for future research: a) The inclusion of a third group of stakeholders, representing the general population/society. It can be composed by ONGs, local development committees, and other organizations in charge of the society interests; b) The attempt to review some parts of this first version of the ME-I^2 Model proposal and maybe trying to simplify it, while preserving the outcomes; c) A possible focus on the host city/region attractiveness to high-tech, advanced services, and highly skilled young people, due to urban amenities and a good quality of life, instead of focusing on one or more economic sectors, once these forces strongly influence their productivity level leading metropolitan regions to be a dynamic engine of national economic growth; d) The continually application of the ME-I^2 Model in different points during the life cycle of the mega event project. The generation of a series of data will be useful to test the model outcomes reliability, i.e. the degree to which a measurement technique can be depended to secure consistent results upon repeated application. This approach to the data collection can also generate a data warehouse, in addition to the traditional tangible measures, that could be useful to raise scientific evidences about the planning and management of impacts and legacies. With the use of the modern big data approaches and techniques (analytics and visualization), needs and interests of the stakeholders can

be revealed in different moments and trend data can be used to correct downsides and deliver value continuously; e) The inclusion of a knowledge-based value creation perspective, not only the IC evaluation one, as the basis for the counterfactual phase of the model's implementations, i.e., trying to uncovering and visualizing the mega event project intellectual capital and tying the strategic vision with the core competencies of the organization. Or as EDVINSSON; MALONE (1999) indicated, both the evaluation and the management (navigation) reveal themselves the two sides of the same coin.

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9. ANNEXES

9.1. Invitation Letter

Prezado(a),

o Centro de Referência em Inteligência Empresarial (CRIE) é o laboratório de pesquisa, desenvolvimento e capacitação em inteligência empresarial do Programa de Engenharia de Produção da COPPE/UFRJ. Temos como missão criar e desenvolver produtos e serviços nas áreas de Gestão da Informação e do Conhecimento de forma a gerar vantagens competitivas sustentáveis para as organizações e contribuir para a inserção competitiva do Brasil na sociedade do conhecimento.

Dentre outros produtos, o CRIE desenvolveu em parceria com o BNDES, no ano de 2007, uma metodologia pioneira em nível mundial de medição de ativos intangíveis para avaliação de empresas. Continuando nosso trabalho neste campo, estamos trabalhando no momento em uma variante desta metodologia para avaliar os impactos das ações de intervenção na área do turismo na cidade do Rio de Janeiro, realizadas em virtude da Copa do Mundo FIFA 2014.

Temos como objetivo final desenvolver um sistema de identificação de valor dos capitais intangíveis para mensuração e avaliação dos impactos de projetos de megaeventos. Esse sistema visa efetuar um diagnóstico situacional, identificar os potenciais impactos e apontar ações com vistas à criação de valor futuro (legado).

Para tanto, necessitamos de sua colaboração em um levantamento de informações na perspectiva da sua organização, por meio de uma entrevista. Os dados coletados serão utilizados especificamente com os fins acima apresentados. Comprometemos-nos a divulgar os resultados dos estudos, sob demanda prévia por escrito, e garantimos o seu anonimato de acordo com as disposições legais.

Coloco à disposição o responsável técnico pelo estudo, Prof. Mauricio Rodrigues (mauricio@pep.ufrj.br), para dirimir eventuais dúvidas e/ou caso necessite de informações adicionais.

Atenciosamente,

Prof. Marcos Cavalcanti

Coordenador do Centro de Referência em Inteligência Empresarial - CRIE/COPPE/UFRJ

9.2. Research informed consent form

Termo de Consentimento Livre e Esclarecido (TCLE)

Prezado(a) entrevistado(a),

o Centro de Referência em Inteligência Empresarial (CRIE) é o laboratório de pesquisa, desenvolvimento e capacitação em inteligência empresarial do Programa de Engenharia de Produção da COPPE/UFRJ. Temos como missão criar e desenvolver produtos e serviços nas áreas de Gestão da Informação e do Conhecimento de forma a gerar vantagens competitivas sustentáveis para as organizações e contribuir para a inserção competitiva do Brasil na sociedade do conhecimento.

Dentre outros produtos, o CRIE desenvolveu em parceria com o BNDES, no ano de 2007, uma metodologia pioneira em nível mundial de medição de ativos intangíveis para avaliação de empresas. Continuando nosso trabalho neste campo, estamos trabalhando no momento em uma variante desta metodologia para avaliar os impactos das ações de intervenção na área do turismo na cidade do Rio de Janeiro, realizadas em virtude da Copa do Mundo FIFA 2014.

Temos como objetivo final desenvolver um sistema de identificação de valor dos capitais intangíveis para mensuração e avaliação dos impactos de projetos de megaeventos. Esse sistema visa efetuar um diagnóstico situacional, identificar os potenciais impactos e apontar ações com vistas à criação de valor futuro (legado).

Para tanto, necessitamos de sua colaboração em um levantamento de informações sobre a perspectiva da sua organização. Sua participação se dará apenas pela resposta às perguntas formuladas pelo(a) pesquisador(a) que irá entrevistá-lo(a). Não temos conhecimento prévio de riscos e desconfortos inerentes ao presente procedimento de coleta de dados. Fique à vontade para declinar a resposta à qualquer questão que não lhe seja conveniente. Você tem garantido o seu direito de não aceitar participar ou de retirar sua permissão, a qualquer momento, sem nenhum tipo de prejuízo ou retaliação pela sua decisão.

Os dados coletados serão utilizados especificamente com os fins acima apresentados. Comprometemo-nos a divulgar os resultados dos estudos, sob demanda prévia, e garantimos o seu anonimato, de acordo com as disposições legais.

Durante todo o período da pesquisa você tem o direito de dirimir eventuais dúvidas ou pedir qualquer outro esclarecimento. Para tanto, colocamos à disposição o responsável técnico pelo presente estudo, Prof. Mauricio Rodrigues (mauricio@pep.ufrj.br), caso necessite de informações adicionais.

Atenciosamente,

Prof. Marcos Cavalcanti

Coordenador do Centro de Referência em Inteligência Empresarial - CRIE/COPPE/UFRJ

Eu, abaixo assinado, após a leitura deste Termo de Consentimento Livre e Esclarecido (TCLE) e ter tido a oportunidade de conversar com o pesquisador(a) entrevistador(a) e/ou com o responsável técnico pelo presente estudo, para esclarecer todas as minhas dúvidas, acredito estar suficientemente informado, ficando claro para mim que minha participação é voluntária e que posso retirar este consentimento a qualquer momento sem penalidades ou perda de qualquer benefício. Estou ciente também dos objetivos da pesquisa, dos procedimentos aos quais serei submetido, dos possíveis danos ou riscos deles provenientes e da garantia de confidencialidade e esclarecimentos sempre que desejar. Diante do exposto expresso minha concordância de espontânea vontade em participar deste estudo.

<table>
<tr><td colspan="2">Nome legível do entrevistado:</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td colspan="2">Data e Assinatura do entrevistado ou de seu representante legal</td></tr>
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<tr><td>Assinatura de uma testemunha</td><td>Assinatura do pesquisador</td></tr>
</table>

9.3. Question sheets

1. Estratégico

1.1 Competência em monitorar o mercado

1.1.1 Processos de captura da informação

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 1.1, de acordo com o indicador Processos de captura da informação (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Mapeamento de oportunidades, ameaças, tendências, movimentação e benefícios esperados pelos atores do setor
2. Forma de obtenção da informação
3. Grau de formalização do processo de captura da informação em relação à utilização de ferramentas e sistemas
4. Resultados obtidos - Houve valor criado?

- Justificativa da resposta (tangibilizar percepção)

Foi utilizado um mecanismo eficiente para monitorar o ambiente externo (aspectos mercadológicos, políticos, sociais, demográficos e tecnológicos) do plano de intervenção?

SIM / NÃO / DESCONHECE

1. Estratégico

1.1 Competência em monitorar o mercado

1.1.2 Processamento / Transformação da informação em conhecimento

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 1.1, de acordo com o indicador Processamento / Transformação da informação em conhecimento (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Forma de processamento da informação para transformá-la em conhecimento
2. Grau de formalização do processo em relação à utilização de ferramentas e sistemas
3. Resultados obtidos - Houve valor criado?

- Justificativa da resposta (tangibilizar percepção)

As informações capturadas se transformaram em conhecimento útil?

SIM / NÃO / DESCONHECE

1. Estratégico

1.1 Competência em monitorar o mercado

1.1.3 Processos de disseminação do conhecimento

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 1.1, de acordo com o indicador Processos de disseminação do conhecimento (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Forma de disseminação
2. Extensão da disseminação
3. Grau de formalização dos processos em relação à utilização de ferramentas e sistemas
4. Resultados obtidos - Houve valor criado?

- Justificativa da resposta (tangibilizar percepção)

O conhecimento foi disseminado pelos gestores e/ou tomadores de decisão aos grupos de interesse (stakeholders)?

SIM / NÃO / DESCONHECE

1. Estratégico

1.2 Competência em formular, implementar e acompanhar a estratégia

1.2.1 Processos de formulação da estratégia

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 1.2, de acordo com o indicador Processos de formulação da estratégia (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Forças e Fraquezas - Comparação com outros eventos
2. Sistema de formulação. Envolveu todos os stakeholders-chaves?
3. Os Recursos operacionais atendiam à estratégia?
4. Grau de formalização do processo em relação à utilização de ferramentas e sistemas
5. Resultados obtidos - Houve valor criado?

- Justificativa da resposta (tangibilizar percepção)

Foi utilizado um processo de formulação estratégica bem estruturado, com o suporte de consultores externos qualificados e envolvendo os stakeholders chaves?

SIM / NÃO / DESCONHECE

1. Estratégico

1.2 Competência em formular, implementar e acompanhar a estratégia

1.2.2 Processos de implantação da estratégia e/ou plano de ação derivado

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 1.2, de acordo com o indicador Processos de implantação da estratégia e/ou plano de ação derivado (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Forma de processamento da informação para transformá-la em conhecimento (forma de interpretação da informação)
2. Grau de formalização do processo em relação à utilização de ferramentas e sistemas
3. Resultados obtidos - Houve valor criado?

- Justificativa da resposta (tangibilizar percepção)

Foi utilizado um processo de implantação da estratégia (BSC, mapa estratégico ou similares) para explicitar a proposição de valor e seus desdobramentos aos stakeholders?

SIM / NÃO / DESCONHECE

1. Estratégico

1.2 Competência em formular, implementar e acompanhar a estratégia

1.2.3 Processos de monitoramento da estratégia (resultados e consequências)

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 1.2, de acordo com o indicador Processos de monitoramento (de resultados e consequências) da estratégia (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Forma de acompanhamento e periodicidade
2. Grau de formalização do processo em relação à utilização de ferramentas e sistemas
3. Realimentação e feedback
4. Resultados obtidos - Houve valor criado?

- Justificativa da resposta (tangibilizar percepção)

Foi utilizado, ao longo do ciclo de vida do projeto, um sistema de monitoramento de objetivos e metas com base em revisões periódicas da estratégia?

SIM / NÃO / DESCONHECE

2. Ecossistema

2.1 Sistema de financiamento do setor/indústria

2.1.1 Grau de abrangência, adequação e acessibilidade do sistema de financiamento

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 2.1, de acordo com o indicador Grau de abrangência, adequação e acessibilidade do sistema de financiamento (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Nível de abrangência - desde microcrédito e/ou venture Capital até o financiamento de grandes projetos de infraestrutura (BNDES, BM, BIRD, etc.)
2. Nível de adequação e condições de acesso aos sistemas de financiamento (Garantia/Aval, Carência, Custo, Prazo de pagamento, Perenidade das Linhas, Volume de recursos)
3. Incentivos fiscais como forma de financiamento

- Justificativa da resposta (tangibilizar percepção)

O setor possui um sistema de financiamento abrangente e apropriado?

SIM / NÃO / DESCONHECE

2. Ecossistema

2.2 Ambiente regulatório (Aspectos institucionais)

2.2.1 Nível de regulação, estabilidade operacional e investimento de longo prazo do setor

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 2.2, de acordo com o indicador Nível de regulação, estabilidade operacional e investimento de longo prazo do setor (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Restrições tarifárias
2. Existência de um Marco Regulatório
3. Relevância da Regulação para o Setor
4. Garantia para atuar e investir

- Justificativa da resposta (tangibilizar percepção)

O setor possui uma estrutura regulatória clara e estável que encoraja os empreendedores a realizar investimentos de longo prazo?

SIM / NÃO / DESCONHECE

2. Ecossistema

2.3 Ambiente de Inovação (P&D) e empreendedorismo

2.3.1 Nível de maturidade do aparato de inovação

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 2.3, de acordo com o indicador Nível de maturidade do aparato de inovação (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Existência de um aparato de Inovação (Centros de Pesquisa, Laboratórios, Universidades)
2. Adequação das pesquisas ao setor
3. Existência de sistema de financiamento à Inovação (FAPs, FINEP, etc.) e programas de incentivo
4. Grau de formalização, simplicidade, compreensão e segurança jurídica das regras de transferência de tecnologia

- Justificativa da resposta (tangibilizar percepção)

Existem instituições de pesquisa de nível internacional que contribuem para agregar valor aos produtos e serviços do setor a partir da pesquisa científica? Existem programas de incentivo governamental, fundos setoriais e/ou prêmios para financiar a pesquisa relacionada ao setor?

SIM / NÃO / DESCONHECE

2. Ecossistema

2.3 Ambiente de Inovação (P&D) e empreendedorismo

2.3.2 Capacidade de inovação

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 2.3, de acordo com o indicador Capacidade de inovação (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Existência de mecanismos de mapeamento de tendências e de inteligência de mercado
2. Capacidade de lançamento de novos produtos e serviços
3. Capacidade de inovação em processos

- Justificativa da resposta (tangibilizar percepção)

O setor consegue mapear tendências, se apropriar da inteligência de mercado e do aparato de inovação da indústria para desenvolver e implantar novos produtos, serviços e processos?

SIM / NÃO / DESCONHECE

2. Ecossistema

2.3 Ambiente de Inovação (P&D) e empreendedorismo

2.3.3 Programas de incentivo ao empreendedorismo e para a criação de novos negócios

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 2.3, de acordo com o indicador Programas de incentivo ao empreendedorismo e para a criação de novos negócios (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Cultura Empreendedora
2. Existência de um aparato de suporte ao empreendedor (Cursos, palestras, incubadoras, microcrédito, etc.)
3. Existência de sistema de financiamento ao empreendedorismo
4. Adequação do aparato de suporte ao setor

- Justificativa da resposta (tangibilizar percepção)

Existem programas de incentivo para o empreendedorismo e/ou a criação de novos negócios no setor?

SIM / NÃO / DESCONHECE

2. Ecossistema

2.4 Infraestrutura e logística

2.4.1 Infraestrutura física (transportes, segurança, energia e cadeia de suprimentos)

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 2.4, de acordo com o indicador Infraestrutura física (transportes, segurança, energia e cadeia de suprimentos) (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Existência e adequação (chega aonde eu preciso?)
2. Condições físicas
3. Custo adequado
4. Transporte
5. Distribuição, logística e armazenamento
5. Segurança
6. Energia

- Justificativa da resposta (tangibilizar percepção)

Existe um sistema de infraestrutura física que atenda às necessidades do setor com custos competitivos?

SIM / NÃO / DESCONHECE

2. Ecossistema

2.4 Infraestrutura e logística

2.4.2 Tecnologias da informação e comunicação (TICs)

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 2.4, de acordo com o indicador Tecnologias da informação e comunicação (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Existência e adequação (chega aonde eu preciso?)
2. Segurança
3. Condições físicas
4. Custo adequado

- Justificativa da resposta (tangibilizar percepção)

Existem sistemas de telefonia e acesso à internet, fixos e móveis, eficientes, apropriados e com custos competitivos?

SIM / NÃO / DESCONHECE

2. Ecossistema

2.4 Infraestrutura e logística

2.4.3. Serviço de informação e suporte aos turistas

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 2.4, de acordo com o indicador Serviço de informação e suporte aos turistas (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Qualidade do serviço prestado
2. Acessibilidade, sinalização, mobiliário urbano, aplicativos, softwares e demais TICs
3. Pressupõe à autonomia dos turistas?
4. Existência e adequação do sistema de divulgação de informações

- Justificativa da resposta (tangibilizar percepção)

Existem sistemas de suporte e de informações ao turista que lhes permita o deslocamento e o acesso aos locais de interesse de forma autônoma pela cidade?

SIM / NÃO / DESCONHECE

2. Ecossistema

2.5. Incentivos ao desenvolvimento do setor/indústria

2.5.1. Nível de desenvolvimento e perspectiva de crescimento do setor/indústria

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 2.5, de acordo com o indicador Nível de desenvolvimento e perspectiva de crescimento do setor/indústria (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Perspectiva de crescimento do setor
2. Grau de maturidade tecnológica
3. Capacidade de identificação e apropriação de rupturas tecnológicas
4. Criação de oportunidades na cadeia de suprimentos (supply chain) local
5. Potencial de inclusão de mão-de-obra qualificada no mercado do setor

- Justificativa da resposta (tangibilizar percepção)

O setor possui um ambiente favorável ao crescimento e desenvolvimento futuro?

SIM / NÃO / DESCONHECE

3. Relacionamento

3.1. Relação com os clientes e/ou usuários finais

3.1.1. Relação com turistas estrangeiros (esfera internacional)

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 3.1, de acordo com o indicador Relação com turistas estrangeiros (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Troca de informações
2. Integração das informações - CRM
3. Grau de formalização do processo de coleta de informações em relação à utilização de ferramentas e sistemas
4. Potencial de fidelização

- Justificativa da resposta (tangibilizar percepção)

Foi realizada algum tipo de troca de informações acerca das expectativas, percepções e motivações dos turistas estrangeiros? Foi colocado em prática um programa adequado de estímulo à visita ao país?

SIM / NÃO / DESCONHECE

3. Relacionamento

3.1. Relação com os clientes e/ou usuários finais

3.1.2. Relação com turistas nacionais e habitantes locais (esfera nacional)

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 3.1, de acordo com o indicador Relação com turistas nacionais e habitantes locais (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Troca de informações
2. Integração das informações - CRM
3. Grau de formalização do processo de coleta de informações em relação à utilização de ferramentas e sistemas
4. Potencial de fidelização
5. Grau de mobilização e engajamento dos habitantes locais

- Justificativa da resposta (tangibilizar percepção)

Foi realizada algum tipo de troca de informações acerca das expectativas, percepções e motivações dos turistas domésticos? Foi colocado em prática um programa adequado de estímulo à visita ao país? Foi colocado em operação um programa de comunicação para acompanhamento das intervenções no setor do turismo, mobilização e suporte do engajamento dos habitantes locais?

SIM / NÃO / DESCONHECE

3. Relacionamento

3.2. Relação com fornecedores e/ou parceiros

3.2.1. Relação entre entes governamentais

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 3.2, de acordo com o indicador Relação entre entes governamentais (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Troca de informações
2. Transparência de propósitos
3. Alinhamento de objetivos e ações
4. Resultados obtidos - Houve valor criado?

- Justificativa da resposta (tangibilizar percepção)

Foi definido e implantado um processo formal de participação dos entes governamentais para troca de informações, transparência de propósitos, alinhamento de objetivos e ações?

SIM / NÃO / DESCONHECE

3. Relacionamento

3.2. Relação com fornecedores e/ou parceiros

3.2.2. Relação com instituições de fomento, financiamento e/ou desenvolvimento

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 3.2, de acordo com o indicador Relação com instituições de fomento, financiamento e/ou desenvolvimento (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Troca de informações
2. Transparência de propósitos
3. Alinhamento de objetivos e ações
4. Estímulo à inovação e/ou ao empreendedorismo
5. Resultados obtidos - Houve valor criado?

- Justificativa da resposta (tangibilizar percepção)

Foi realizada algum tipo de troca de informações acerca das linhas de fomento e/ou financiamento já existentes para o setor, para alinhamento de propósitos? Foi implantado um processo formal para envolver as Instituições/agências de fomento, financiamento e/ou desenvolvimento na formulação e execução da estratégia das intervenções no setor do turismo?

SIM / NÃO / DESCONHECE

3. Relacionamento

3.2. Relação com fornecedores e/ou parceiros

3.2.3. Relação com empresas do setor / Associações setoriais

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 3.2, de acordo com o indicador Relação com empresas do setor / Associações setoriais (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Troca de informações
2. Transparência de propósitos
3. Alinhamento de objetivos e ações
4. Estímulo à inovação e/ou ao empreendedorismo
5. Resultados obtidos - Houve valor criado?

- Justificativa da resposta (tangibilizar percepção)

Foi realizada algum tipo de troca de informações acerca das expectativas, percepções, necessidades e motivações das empresas do setor / Associações setoriais? Foi colocado em operação um programa de comunicação para acompanhamento das intervenções, mobilização e suporte do engajamento do setor do turismo? Existiu processo formal para envolver as empresas na formulação e execução da estratégia das intervenções no setor do turismo?

SIM / NÃO / DESCONHECE

3. Relacionamento

3.3. Marca / Reputação / Percepção da identidade da cidade

3.3.1. Esfera nacional

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 3.3, de acordo com o indicador Percepção da identidade da cidade na Esfera nacional (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Investimento na divulgação
2. Quantidade/qualidade das matérias/editoriais publicados na mídia nacional
3. Quantidade/qualidade da presença em feiras relevantes do setor, realizadas no Brasil
4. Acesso ao website e/ou demais locais de divulgação / acompanhamento das intervenções no setor do turismo
5. Resultados obtidos - Houve valor criado?
6. Forma como a cidade é percebida na esfera nacional

- Justificativa da resposta (tangibilizar percepção)

O investimento na construção/divulgação da imagem institucional da cidade em âmbito nacional foi satisfatório? Houve menções positivas em mídia espontânea? Houve participação em feiras/exposições relevantes no setor? Existe um website, blog e/ou local de divulgação das melhorias e acompanhamento das ações?

SIM / NÃO / DESCONHECE

3. Relacionamento

3.3. Marca / Reputação / Percepção da identidade da cidade

3.3.2. Esfera internacional

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 3.3, de acordo com o indicador Percepção da identidade da cidade na Esfera internacional (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Investimento na divulgação
2. Quantidade/qualidade das matérias/editoriais publicados na mídia internacional
3. Quantidade/qualidade da presença em feiras relevantes do setor, realizadas no exterior
4. Acessos ao website e/ou demais locais de divulgação / acompanhamento das intervenções no setor do turismo
5. Resultados obtidos - Houve valor criado?
6. Forma como a cidade é percebida na esfera internacional

- Justificativa da resposta (tangibilizar percepção)

O investimento na construção/divulgação da imagem institucional da cidade em âmbito internacional foi satisfatório? Houve menções positivas em mídia espontânea? Houve participação em feiras/exposições relevantes no setor? Foi elaborado um website, blog e/ou local de divulgação das melhorias e acompanhamento das ações, acessíveis em língua estrangeira?

SIM / NÃO / DESCONHECE

3. Relacionamento

3.3. Marca / Reputação / Percepção da identidade da cidade

3.3.3. Estratégia (Plano) de comunicação

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 3.3, de acordo com o indicador Estratégia (Plano) de comunicação (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Mapeamento de oportunidades, ameaças, tendências e movimentação dos atores do setor
2. Forma de obtenção da informação bruta
3. Profundidade da informação obtida
4. Forças e Fraquezas - Comparação com outros eventos
5. Sistema de formulação. Envolve todos os atores?
6. Grau de formalização do processo de captura da informação em relação à utilização de ferramentas e sistemas
7. Acompanhamento da influência da mídia na formação de opinião e seus efeitos no planejamento e na implantação das intervenções no setor do turismo
8. Resultados obtidos - Houve valor criado?

- Justificativa da resposta (tangibilizar percepção)

Foi utilizado um mecanismo eficiente para captura da informação e monitoramento do ambiente setorial? Foi colocado em prática um processo de formulação estratégica bem estruturado usando o apoio de empresas de consultoria externa qualificada e com a participação dos atores do setor (empresas, associações setoriais, etc.)? O plano foi bem divulgado, de forma regular?

SIM / NÃO / DESCONHECE

3. Relacionamento

3.4. Redes de interação

3.4.1. Potencial de desenvolvimento de produtos, serviços e processos

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 3.4, de acordo com o indicador Potencial de desenvolvimento de produtos, serviços e processos (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Processo formalizado de PD&I
2. Articulação entre clientes, usuários, parceiros e fornecedores para desenvolvimento de produtos, serviços e processos (combinados ou não)
3. Linhas de financiamento / incentivo
4. Resultados obtidos - Houve valor criado?

- Justificativa da resposta (tangibilizar percepção)

Houve estímulo para a construção, desenvolvimento ou articulação de redes competitivas para o desenvolvimento de novos produtos, serviços e processos, de forma coordenada entre parceiros, fornecedores e clientes e/ou usuários?

SIM / NÃO / DESCONHECE

3. Relacionamento

3.4. Redes de interação

3.4.2. Potencial de desenvolvimento do setor

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 3.4, de acordo com o indicador Potencial de desenvolvimento do setor (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Processo formalizado para o desenvolvimento do setor
2. Articulação entre clientes, usuários, parceiros e fornecedores para exploração de mercado
3. Linhas de financiamento / incentivo a criação de redes de interação
4. Resultados obtidos - Houve valor criado?

- Justificativa da resposta (tangibilizar percepção)

Houve estímulo para a construção, desenvolvimento ou articulação de redes de interação de forma a explorar novos mercados? (Ex.: setor de software)

SIM / NÃO / DESCONHECE

3. Relacionamento

3.4. Redes de interação

3.4.3. Grau de articulação e governança da rede

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 3.4, de acordo com o indicador Grau de articulação e governança da rede (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Processo formalizado de internalização do conhecimento pelos parceiros e fornecedores (públicos e privados) - Gestão do Conhecimento
2. Nível de confiança entre os atores - Capital Social
3. Complexidade da rede - número de atores envolvidos
4. Resultados obtidos - Houve valor criado?

- Justificativa da resposta (tangibilizar percepção)

As redes de interação criadas estão contribuindo para o crescimento e desenvolvimento dos participantes? Os componentes conseguem se apropriar dos conhecimentos que fluem na rede? Os componentes conseguem se apropriar dos ganhos da rede? As redes possuem uma visão compartilhada, respeito aos parceiros e princípios de governança? Os gestores e tomadores de decisão das intervenções no setor do turismo foram ativos nesta rede?

SIM / NÃO / DESCONHECE

4. Estrutural

4.1. Sistema de governança corporativa

4.1.1. Transparência das informações para a sociedade

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 4.1, de acordo com o indicador Transparência das informações para a sociedade (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Publicação de Informações relevantes
2. Regularidade das informações publicadas
2. Tipo e qualidade dos dados / relatórios publicados
3. Aderente à estratégia de dados abertos (open data)?

- Justificativa da resposta (tangibilizar percepção)

As informações relevantes sobre o andamento das ações estruturais e as informações que possam impactar em um aproveitamento econômico do setor são divulgadas de forma regular e transparente não permitindo que existam ganhos devido a 'insider information'?

SIM / NÃO / DESCONHECE

4. Estrutural

4.1. Sistema de governança corporativa

4.1.2. Controle / Auditoria externo da gestão e/ou tomada de decisão

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 4.1, de acordo com o indicador Controle / Auditoria externo da gestão e/ou tomada de decisão (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Subordinação da auditoria e/ou do conselho externos aos gestores/tomadores de decisão das intervenções no setor do turismo
2. Composição do corpo de conselheiros / auditores

- Justificativa da resposta (tangibilizar percepção)

Existiu um controle / auditoria externo independente, não subordinado aos órgãos executivos? Existiu um corpo de aconselhamento (conselheiros) composto por indivíduos independentes?

SIM / NÃO / DESCONHECE

4. Estrutural

4.1. Sistema de governança corporativa

4.1.3. Responsabilidade social

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 4.1, de acordo com o indicador Responsabilidade social (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Execução de uma política de responsabilidade social a partir da iniciativa propriamente dita
2. Estimulo para a condução de uma política de responsabilidade social por parte de fornecedores, parceiros, clientes e usuários finais

- Justificativa da resposta (tangibilizar percepção)

Existiu uma política de responsabilidade social associada formalmente às intervenções no setor do turismo?

SIM / NÃO / DESCONHECE

4. Estrutural

4.1. Sistema de governança corporativa

4.1.4. Responsabilidade ambiental

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 4.1, de acordo com o indicador Responsabilidade ambiental (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Execução de uma política de responsabilidade ambiental a partir da iniciativa propriamente dita

2. Estimulo para a condução de uma política de responsabilidade ambiental por parte de fornecedores, parceiros, clientes e usuários finais

- Justificativa da resposta (tangibilizar percepção)

Existiu uma política de responsabilidade ambiental associada formalmente às intervenções no setor do turismo?

SIM / NÃO / DESCONHECE

4. Estrutural

4.1. Sistema de governança corporativa

4.1.5. Profissionalização da gestão

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 4.1, de acordo com o indicador Profissionalização da gestão (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Grau de autonomia da tomada de decisão
2. Empowerment

- Justificativa da resposta (tangibilizar percepção)

Existiu um sistema claro de delegação de responsabilidades? As ações do plano de intervenção estão sujeitas a alguma forma de controle político?

SIM / NÃO / DESCONHECE

4. Estrutural

4.2. Sistemas administrativos

4.2.1. Gestão (ou certificação) de processos e da qualidade

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 4.2, de acordo com o indicador Gestão / certificação de processos e da qualidade (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Relação custo x benefício da implantação da certificação de processos
2. Resultados obtidos - Houve valor criado?

- Justificativa da resposta (tangibilizar percepção)

As atividades do plano de intervenção foram alvo de certificação e/ou gestão de processos e/ou gerenciamento da qualidade (CMM, PMI, ISO, etc)?

SIM / NÃO / DESCONHECE

4. Estrutural

4.2. Sistemas administrativos

4.2.2. Sistemas de gestão

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 4.2, de acordo com o indicador Sistemas de gestão (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Relação custo x benefício da implantação
2. Abrangência do sistema
3. Nível de Integração do sistema com as demais ações em curso de preparação e legado do megaevento
4. Resultados obtidos - Houve valor criado?

- Justificativa da resposta (tangibilizar percepção)

Foi colocado em operação um sistema de gestão (ou ERP) compatível com as necessidades?

SIM / NÃO / DESCONHECE

4. Estrutural

4.2. Sistemas administrativos

4.2.3. Eficiência operacional / Avaliação do desempenho

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 4.2, de acordo com o indicador Eficiência operacional / Avaliação do desempenho (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Relação custo x benefício da implantação
2. Abrangência do sistema
3. Nível de Integração do sistema com as demais ações em curso de preparação e legado ao mega evento
4.Resultados obtidos - Houve valor criado?

- Justificativa da resposta (tangibilizar percepção)

Foi colocado em operação um processo operacional integrado (tipo BSC) que permita maximizar a eficiência operacional e realizar a avaliação do desempenho das intervenções no setor do turismo?

SIM / NÃO / DESCONHECE

4. Estrutural

4.2. Sistemas administrativos

4.2.4. Avaliação do risco operacional

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 4.2, de acordo com o indicador Avaliação do risco operacional (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Abrangência do sistema de avaliação
2. Processos de mapeamento
3. Processos de avaliação e tomada de decisão
4. Processos de resposta
5. Nível de Integração do sistema com as demais ações em curso de preparação e legado ao mega evento
6. Resultados obtidos - Houve valor criado?

- Justificativa da resposta (tangibilizar percepção)

Foi colocado em operação um sistema de mapeamento, avaliação e resposta aos riscos operacionais das intervenções no setor do turismo?

SIM / NÃO / DESCONHECE

4. Estrutural

4.2. Sistemas administrativos

4.2.5. Cultura e lógica de racionalidade

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 4.2, de acordo com o indicador Cultura e lógica de racionalidade (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Grau de envolvimento dos stakeholders
2. Grau de influência política
3. Mapeamento de conflitos
4. Resposta e/ou mitigação aos conflitos e dualidades
5. Estímulos à cooperação entre os stakeholders

- Justificativa da resposta (tangibilizar percepção)

Foi colocado em operação um processo para lidar com conflitos de interesses e com os diferentes valores e lógicas de racionalidade (formas de fazer ou pensar), em função do grande número de stakeholders envolvidos?

SIM / NÃO / DESCONHECE

5. Humano

5.1. Gestores e tomadores de decisão (atuação no nível estratégico das ações de intervenção estrutural na área do turismo)

5.1.1. Adequação (qualificação e alinhamento) dos recursos humanos em relação aos objetivos das intervenções no setor do turismo

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 5.1, de acordo com o indicador Adequação (qualificação e alinhamento) dos recursos humanos em relação aos objetivos das intervenções no setor do turismo (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Visão estratégica
2. Adequação das competências à estratégia das intervenções no setor do turismo
3. Formação e experiência prévia (habilidades, competências, conhecimento, know-how/savoir-faire)

- Justificativa da resposta (tangibilizar percepção)

Os gestores e tomadores de decisão estão alinhados e qualificados para atingir os objetivos estabelecidos e a visão do plano de intervenção?

SIM / NÃO / DESCONHECE

5. Humano

5.1 Gestores e tomadores de decisão

5.1.2. Capacitação e gestão de competências

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 5.1, de acordo com o indicador Capacitação e gestão de competências (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Análise de gaps de competência
2. Existência, adequação e acesso à programas de capacitação e gestão de talentos
3. Mecanismos de acompanhamento e inserção profissional

- Justificativa da resposta (tangibilizar percepção)

Existem programas de gestão de competências para identificar os gaps e melhorar o desempenho dos gestores e tomadores de decisão? Esses programas são adequados? Os programas levam em consideração as necessidades dos clientes e/ou usuários finais? Os melhores talentos são identificados e preparados para promoções?

SIM / NÃO / DESCONHECE

5. Humano

5.1 Gestores e tomadores de decisão

5.1.3. Motivação e comprometimento com resultados

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 5.1, de acordo com o indicador Motivação e comprometimento com resultados (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Existência e adequação de sistema de medição de desempenho e feedback
2. Existência de mecanismos de divulgação, comunicação e transparência em relação às responsabilidades de gestores e tomadores de decisão
3. Existência e adequação de sistemas de incentivos, benefícios e recompensas
4. Grau de mobilização e engajamento dos gestores e tomadores de decisão

- Justificativa da resposta (tangibilizar percepção)

Os gestores e tomadores de decisão estão comprometidos com os objetivos das intervenções no setor do turismo? Existe um processo de estabelecimento de metas, de aplicação de estímulos e de medição do desempenho individual?

SIM / NÃO / DESCONHECE

5. Humano

5.2 Operadores / executores (não atuam no nível estratégico, mas sim operacional das ações de intervenção estrutural na área do turismo)

5.2.1. Adequação (qualificação e alinhamento) dos recursos humanos em relação aos objetivos das intervenções no setor do turismo

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 5.2, de acordo com o indicador Adequação (qualificação e alinhamento) dos recursos humanos em relação aos objetivos das intervenções no setor do turismo (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Visão estratégica
2. Adequação das competências aos objetivos e à estratégia das intervenções no setor do turismo
3. Formação e experiência prévia (habilidades, competências, conhecimento, know-how/savoir-faire)

- Justificativa da resposta (tangibilizar percepção)

Os operadores estão alinhados e qualificados para atingir os objetivos estratégicos? Existe processo formal para envolver os operadores no alinhamento e execução da estratégia?

SIM / NÃO / DESCONHECE

5. Humano

5.2 Operadores / executores

5.2.2. Capacitação e gestão de competências

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 5.2, de acordo com o indicador Capacitação e gestão de competências (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Análise de gaps de competência
2. Existência, adequação e acesso à programas de capacitação e gestão de competências
3. Mecanismos de acompanhamento e inserção profissional

- Justificativa da resposta (tangibilizar percepção)

Existem programas para melhoria do desempenho funcional dos operadores/executores? Os programas são adequados? Os programas levam em consideração as necessidades dos clientes e/ou usuários finais? Os melhores talentos são identificados e preparados para promoções?

SIM / NÃO / DESCONHECE

5. Humano

5.2 Operadores / executores

5.2.3. Motivação e comprometimento com resultados

- Qual é o impacto / efeito das intervenções da indústria do turismo que foram realizadas para a adequação da cidade do Rio de Janeiro à Copa do Mundo FIFA 2014 no ativo/competência 5.2, de acordo com o indicador Motivação e comprometimento com resultados (melhorou, piorou ou não teve impacto)?

Melhorou				Sem impacto	Piorou			
Completamente	Bastante	Moderadamente	Pouco	Neutro	Pouco	Moderadamente	Bastante	Completamente
2	1,5	1	0,5	0	-0,5	-1	-1,5	-2

Levar em consideração:

1. Grau de participação dos operadores e executores nas decisões
2. Existência e adequação de sistemas de medição de desempenho e feedback
3. Existência e adequação de sistemas de incentivos, benefícios e recompensas
4. Grau de mobilização e engajamento dos operadores e executores

- Justificativa da resposta (tangibilizar percepção)

Os operadores/executores estão comprometidos com os objetivos das intervenções no setor do turismo? Existe um processo de estabelecimento de metas, de aplicação de estímulos e de medição do desempenho individual?

SIM / NÃO / DESCONHECE